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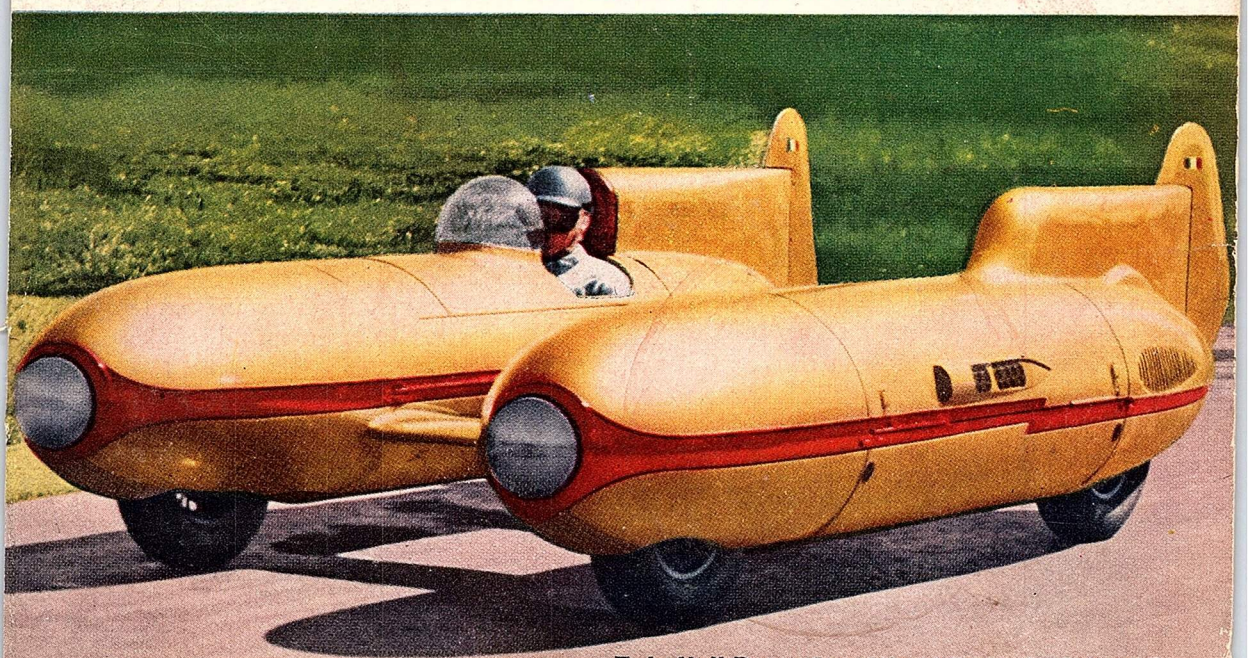
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America's Largest Post-War Yacht—Page 80

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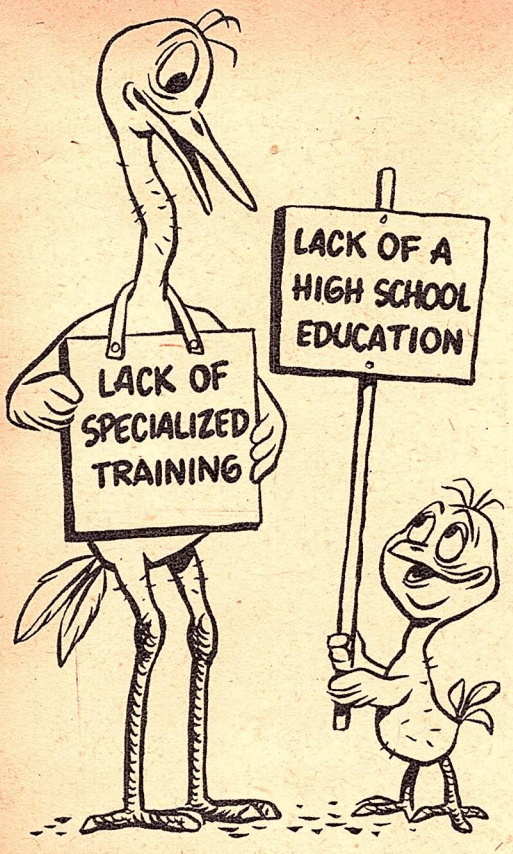
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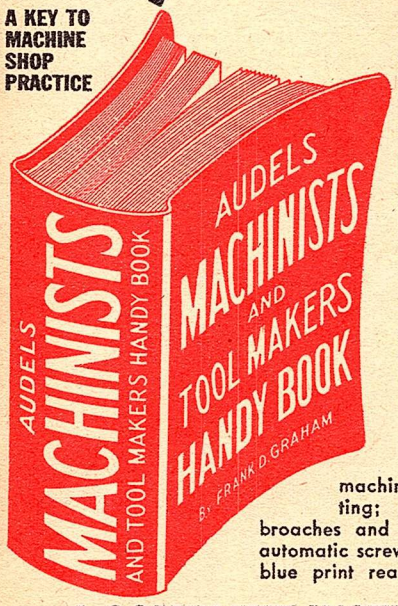
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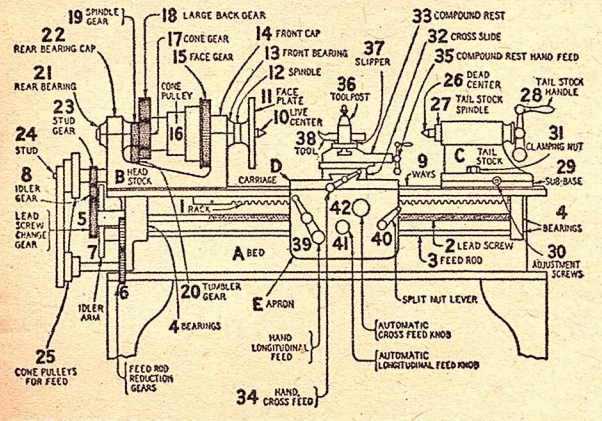
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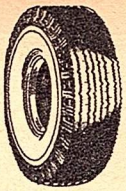
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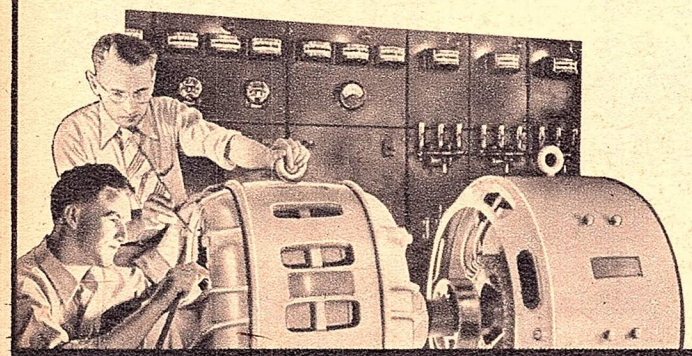
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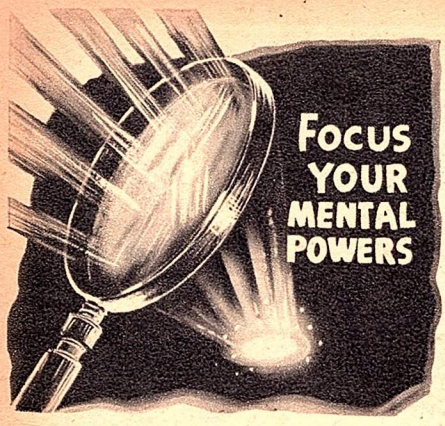
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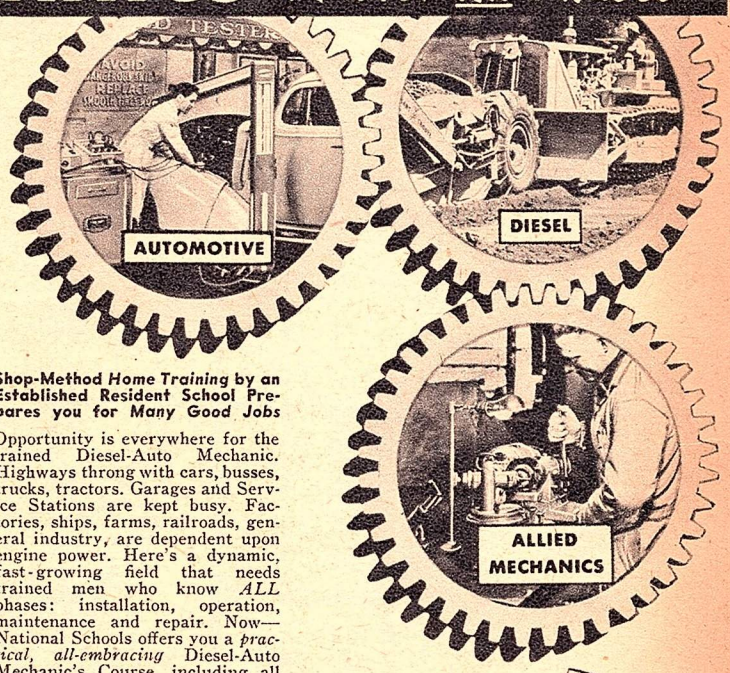
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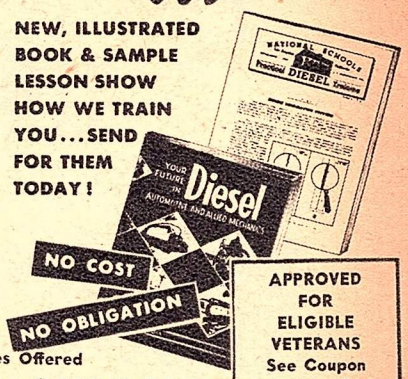
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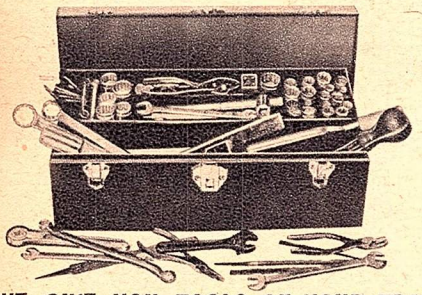
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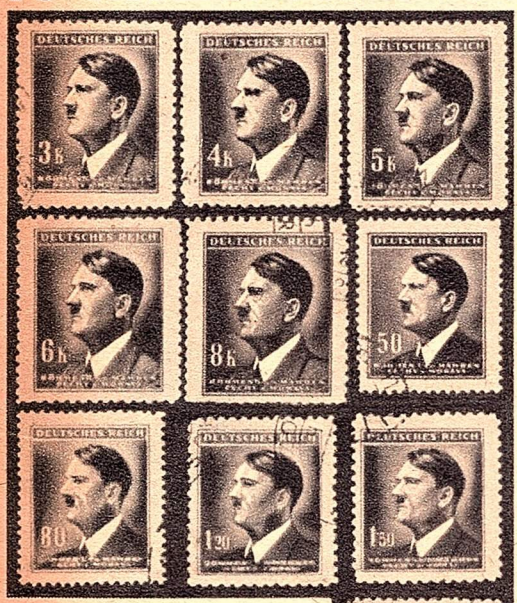
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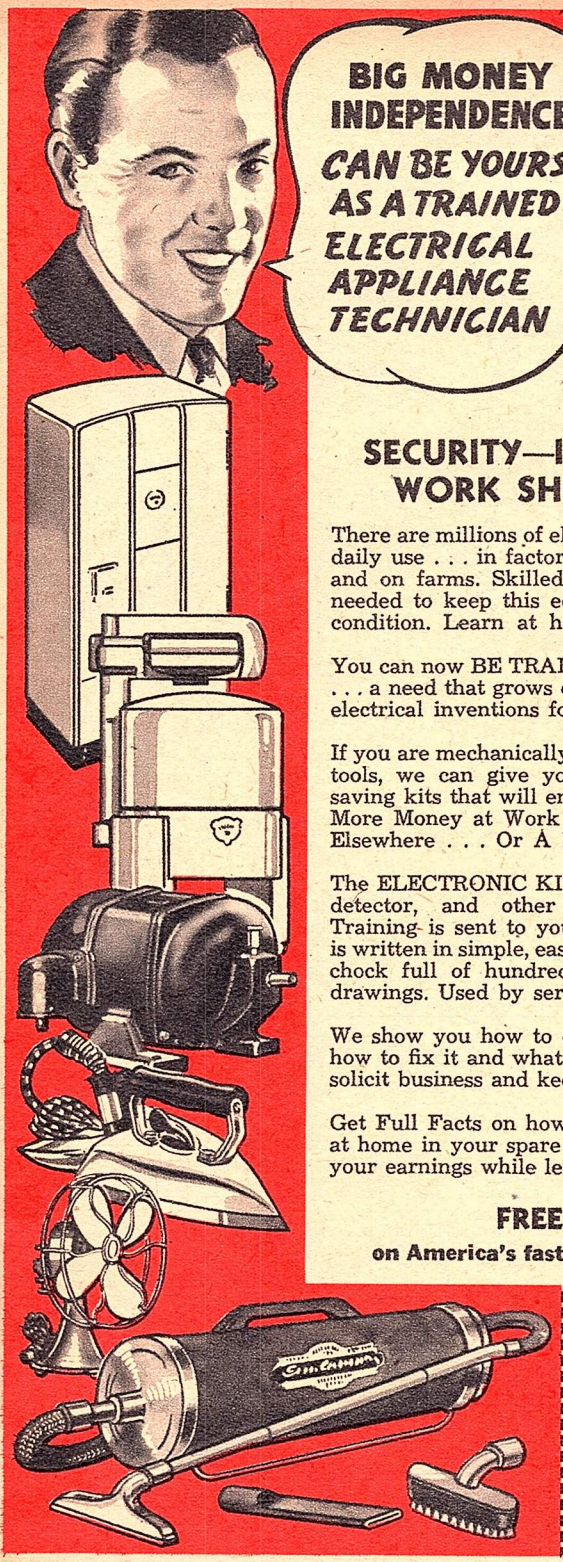
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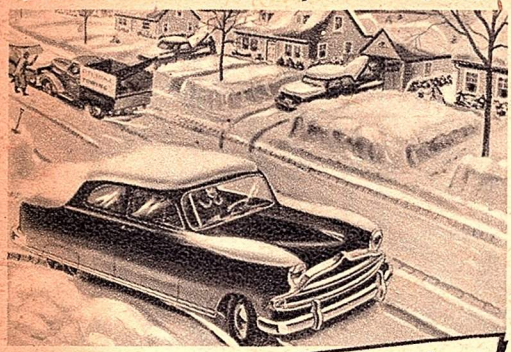
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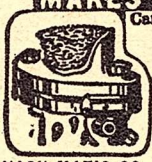


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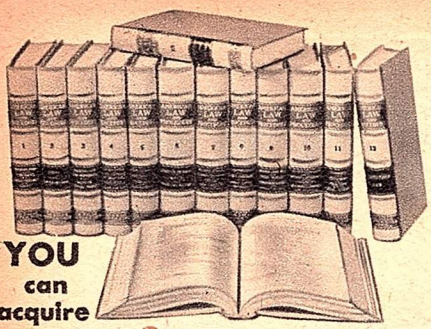
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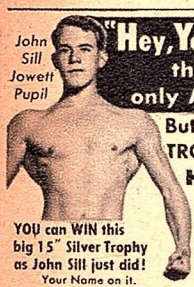
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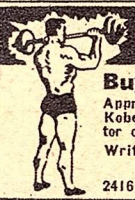
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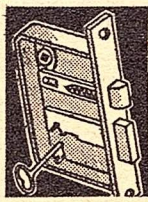
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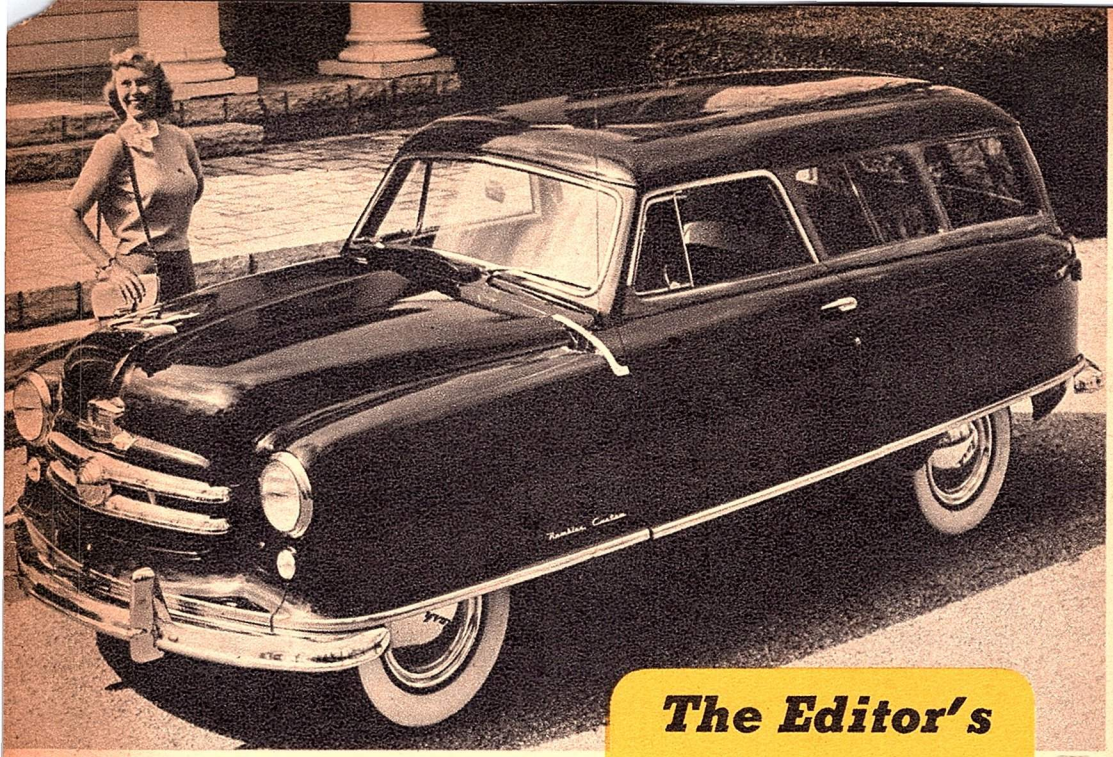
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This is a Nash Rambler Airflyte station wagon, a duplicate of which is going to be won by some MI reader at no cost whatsoever. See text below.

The Editor's Workbench

A New Car—Free!

See that cute little tomato up there at the top of the page? Well, how'd you like to own it—absolutely free? (No, Stanley, not the girl, the car!) How would you like to make an investment of having yourself some fun—and wind up by owning one of these super-snazzy Nash Rambler Airflyte station wagons, fully equipped with $300 worth of de luxurious stuff like a radio, the famous Nash Weather Eye conditioned air system, foam cushion seats, directional turn signals, chrome wheel discs, electric clock, cigarette lighter—the works? All free!

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As you and I know, this here country of ours is contest-crazy. We got more schemes for giving people something for nothing than ants at a picnic. Most of these contests aren't much fun to work—the only thrill you get is from copping one of the prizes. So we bright characters here at MECHANIX ILLUSTRATED have come up with a different kind of a contest that is guaranteed to be a barrel of entertainment *even if you lose!*

In addition to the first prize of a brand-new and nifty Nash Rambler station wagon, just like the one in the picture, we are going to console the lads whose answers were good, but not quite good enough, by passeling out some very handsome subsidiary awards in the way of do-re-mi, otherwise known as money, in the aggregate of several hundred bucks.

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All you have to do is—well, I'm not going to tell you the details at this time. But you can take my word and Uncle Thomas J. McCahill's that it is going to be a real fascinator and that anything you may happen to know about automobiles will not be held against you. No need to be an expert. Anybody who is interested in automobubbles, and has a fairly good eye and memory for same, can ride off in that Nash Rambler station wagon. (For the last time, Herman, the babe is not included!) Interested? I'll tell you more about it next month.—*Bill Parker.*

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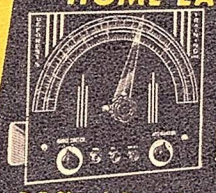
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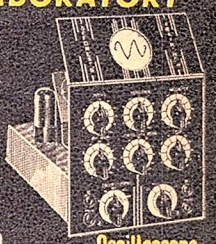
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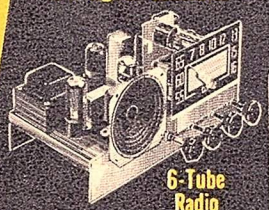
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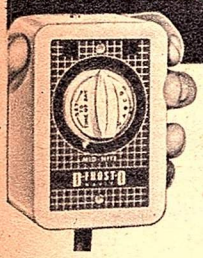
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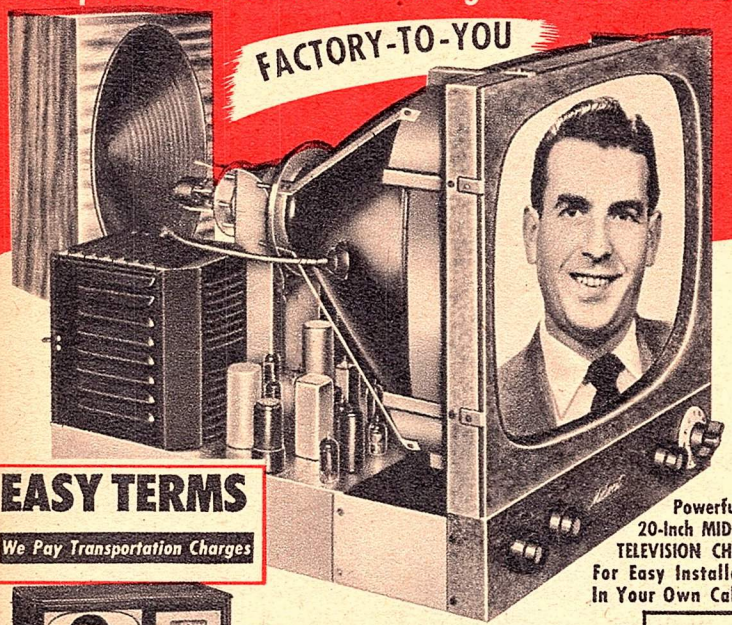
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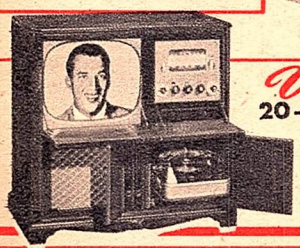


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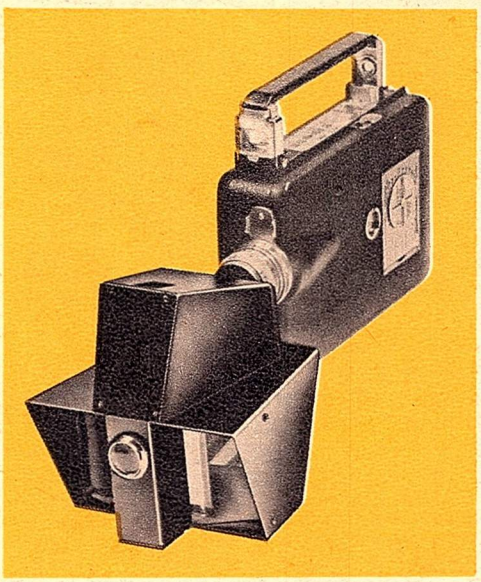
Invention Clinic

JOSEPH H. KRAUS

Three Dimensional Photos And Movies

EVER since the beginning of photography, inventors have striven to give a stereoscopic effect to photographic reproductions either in motion or still forms. Periodically during the intervening years, one or another system has become a fad—one such wave of enthusiasm in still photography is currently popular. Adaptation of similar results to televised images is something which is also being discussed.

Anyone with two good eyes who has viewed pictures through an old-fashioned stereoscope with which our grandparents used to amuse themselves, or who has witnessed the modern versions of stereo stills, is enchanted with the vivid realism. The pictures fairly jump out into the room. Images appear in space over the heads of the audience down front. Yet, in spite of the vast amount of work which has been done in this field, there is not a single completely satisfactory stereo system in existence. Hence, this field is wide open for a practical solution.



Nord three-dimensional attachment for 16-mm movie cameras, takes stereoscopic pictures automatically. Just increase exposure about ⅔ stop.

Understanding Stereoscopism

True stereoscopic vision is not possible by persons with only one eye or by those who have a marked defect in vision in one eye. Even with perfect vision, the sense of depth fails beyond 100 feet or so. In fact, recent research would tend to prove that psychology plays a most important role in stereoscopic vision.

If you look at a tree across the yard the trunk appears somewhat round. Science says that each eye sees the tree from a different angle. To a large measure this is also a psychological manifestation. By experience, you have come to know that the trunk is about as thick, front to back, as it is from side to side. The image of the tree on the retina of the eye is different for each eye. These merge into one, and the mind conjures up a round tree. But, put a wooden cutout in the same position, paint it to resemble the tree trunk and nearly every spectator will swear that it also is a normal tree.

Nearly all of the attempts at stereoscopism have been based on this principle of obtaining two different views of the same object and merging them by the eye and mind. Usually, there is a definite system which will permit one eye to see only one of the pictures while the other eye sees the second view.

Based on this principle, a whole series of geometrical patterns has been drawn on paper, which when viewed through a stereoscope give the illusion of great depth. Some

[*Continued on pgae* 22]



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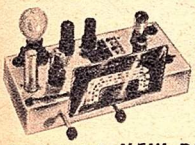
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Invention Clinic

[*Continued from page* 20]

of these drawings were made by a man who performed the calculations separately for each eye, and who never did see the results of his efforts because he was blind in one eye.

Generally there is no problem in getting the stereoscopic pictures in print form for viewing or projection. In effect, two cameras are set side by side and both shutters are snapped simultaneously. The basic requirement is that the two lenses be separated the average distance between the eyes, namely about $2\frac{3}{16}$ inches apart. The more modern stereoscopic cameras are duplicates of those in use 40 years ago. One film is used, which makes possible easier alignment of the prints. In motion picture stereos, the images may be side by side or appear alternately under each other on the same strip of film. Sometimes two cameras are set side by side and the prints from each are projected simultaneously.

Viewing Is the Problem

Thus it would appear that two pictures are needed, preferably obtained from a slightly different angle. But apparently, the taking of the pictures is not the big problem; it's the viewing.

The old fashioned stereoscope and some of the more modern versions contain two half lenses or specially cut prisms. Their purpose is to direct the vision of each eye to only one picture. Sometimes, there is a slight enlargement of the picture at the same time. Usually, the illumination is substantially equal for both pictures. In some, this becomes possible by the use of positive prints on film, either black-and-white or color, with diffused natural or artificial light for illumination. While these are satisfactory for individual use, they are not suited to large audiences and projection.

[*Continued on page* 24]

INVENTORS

Whether an invention is patentable can be substantially determined by a search of the U. S. Patent records. Without obligation, write for information explaining the steps you should take to secure a patent.

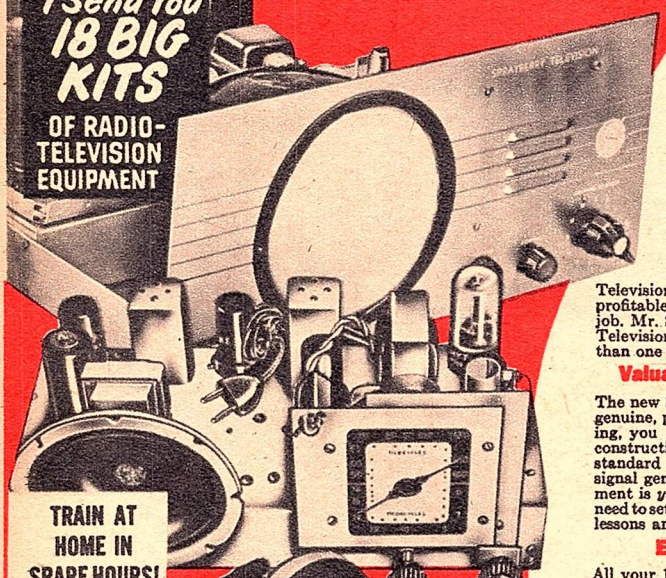
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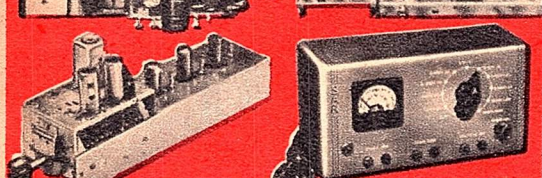
All your 10 months of training is AT YOUR HOME in spare hours. Keep on with your present job and income while learning . . . and earn EXTRA CASH in addition. With each training "package" unit, you receive extra plans and ideas for spare time Radio-Television jobs. Many students pay for their entire training this way. If you expect to be in the armed forces later, there is no better preparation than good Radio-Television training.

FREE 3 BIG RADIO-TELEVISION BOOKS



I want you to have ALL the facts about my new 10-MONTH Radio-Television Training—without cost! Rush coupon for my three big Radio-Television books: "How to Make Money in Radio-Television," PLUS my new illustrated Television Bulletin PLUS an actual sample Sprayberry Lesson—all FREE. No obligation and no salesman will call. Mail coupon NOW! I will rush all three books at once!

Sprayberry Academy of Radio, Dept. 15-E
111 North Canal St. Chicago 6, Ill.



IF YOU ARE EXPERIENCED IN RADIO

Men already in Radio who seek a short intensive 100% TELEVISION Training with FULL EQUIPMENT INCLUDED are invited to check and mail the coupon at the right.

Mail Coupon Today!

NO OBLIGATION
No Salesman Will Call

SPRAYBERRY ACADEMY OF RADIO, Dept. 15-E
111 North Canal St., Chicago 6, Ill.

Please rush to me all information on your 10-MONTH Radio-Television Training Plan. I understand this does not obligate me and that no salesman will call upon me.

Name.....Age.....

Address.....

City.....Zone....State.....

Please Check Below About Your Experience
☐ Are You Experienced? ☐ No Experience.

I need 500 Men

to wear

SAMPLE SUITS



Pay No Money— Send No Money

My values in made-to-measure suits are so sensational, thousands of men order when they see the actual garments. I make it easy for you to get your own suit to wear and show—**Make money in full or spare time this easy way!**

My Plan is AMAZING!

Just take a few orders at my low money-saving prices—that's all! Get your own personal suit to wear and show—make money fast taking orders. Spare time pays big. No experience needed. You pay no money, now or any time.

Mail Coupon . . .

Rush this coupon today for full facts and BIG SAMPLE KIT containing more than 100 fine woolens in all popular weights and shades. Be one of the 500 top-notchers I need to wear, show, and take orders for my suits. Act now.

STONE-FIELD CORP., Dept. B-734, 500 S. TROOP ST., CHICAGO 7, ILL.

FREE Selling kit worth many dollars, containing actual sample woolens. Mail coupon!

STONE-FIELD CORP., Dept. B-734, 500 S. Throop St., Chicago 7, Ill.

Dear Sir: **I want a Sample Suit to Wear and Show,** without paying 1c for it. Rush Valuable Sample Suit Coupon and Sample Kit of actual fabrics, **absolutely Free.**

*Name*_____ *Age*_____

*Address*_____

*City*_____ *State*_____

INVENTORS

Before you make any effort to market your invention, you should take the first steps toward proceeding for patent protection.

I shall be pleased to furnish you with information relative to patent procedure upon request from you, and this will be without any obligation on your part.

PATRICK D. BEAVERS

Registered Patent Attorney

923 Columbian Building Washington 1, D. C.

Invention Clinic

[*Continued from page 22*]

So here is the real problem: to find a suitable system to project two pictures simultaneously or in close sequence and so controllable that only one series of pictures will be seen. Ideally, this should be done with the naked eye, which is the way you normally see stereoscopically.

Pseudo or Real

Many of the inventors who have worked on this problem do not seem to be able to distinguish between pseudo and real stereoscopism. No amount of argument seems to avail—like the person who is color blind and doesn't know it, to these inventors things seem right as they see them.

The great stumbling block here is psychological. The inventor thinks that his projected view gives a stereo effect. He selects his pictures with great care, usually those showing high contrasts. His strong assertions make spectators agree that the pictures are realistic. This merely fortifies his belief in the soundness of his system.

The inventor should make every effort to avoid error of judgment. One great aid is a good, simple test picture easily made. Use a stereo camera or take two shots with an ordinary camera of a table top picture set up as follows:

Dip a dozen toothpicks into black ink. To one end of each, attach small bits of paper to represent flags. Stick free ends into a white sheet of paper at irregular distances from the camera. Lighting should be completely shadowless. Frame nothing but the prepared area in your shot. When printed, the two pictures will be observed in true perspective in real stereo but will be flat in a one eye view or pseudo-stereo. •

INVENTORS

Send for PATENT INFORMATION Book and INVENTOR'S RECORD without obligation

GUSTAVE MILLER

12MI Warner Building Washington 4, D.C.

REGISTERED PATENT ATTORNEY

Patent Attorney & Advisor U. S. NAVY DEPT. 1930-'47

ASSOCIATE EXAMINER U. S. PAT. OFF. 1922-1929

PATENT LAWYER

INVENTORS

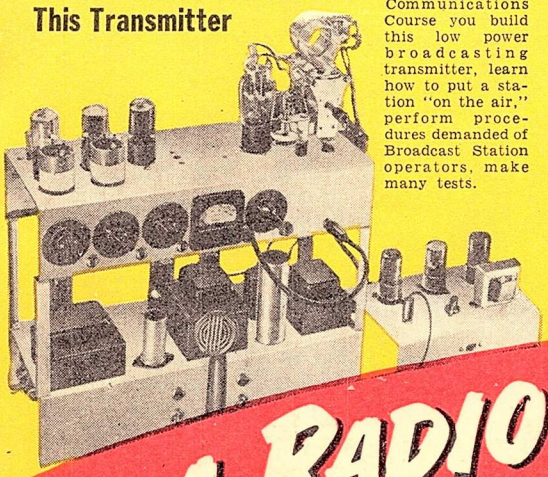
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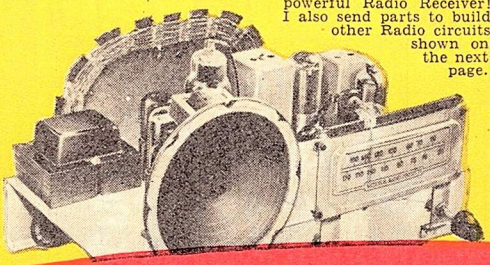
You Practice COMMUNICATIONS
I Send You Parts to Build This Transmitter

As part of my Communications Course you build this low power broadcasting transmitter, learn how to put a station "on the air," perform procedures demanded of Broadcast Station operators, make many tests.



You Practice Radio SERVICING
On This Modern Radio You Build With Parts I Send

As part of my Servicing Course, I send you the speaker, tubes, chassis, transformer, loop antenna, EVERYTHING you need to build this modern, powerful Radio Receiver! I also send parts to build other Radio circuits shown on the next page.



READ Other Side, Too!

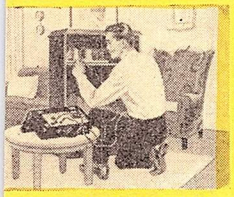
BE A RADIO-TELEVISION TECHNICIAN

I WILL TRAIN YOU AT HOME

Learn Servicing or Communications Practice With Many KITS You Get

Do you want good pay, a job with a bright future and security? Would you like to have a profitable shop or store of your own? If so, find out how you can realize your ambition in the fast growing, prosperous RADIO-TELEVISION industry. Even without Television, the industry is bigger than ever before. 90 million home and auto Radios, 3,100 Broadcasting Stations, expanding use of Aviation and Police Radio, Micro-Wave Relay, Two-Way Radio for buses, taxis, etc. are making opportunities for Servicing and Communications Technicians and FCC-Licensed Operators.

Make $10 EXTRA a week in Spare Time



Keep your job while training. Learn Radio-Television principles from illustrated lessons. Get Practical Experience experimenting with circuits common to Radio and Television. Many students make $5, $10 a week extra fixing neighbors' Radios in spare time while learning.

Have your Own Business

Let me show you how you can be your own boss. Many N.R.I. trained men start their own business with capital earned in spare time. Robert Dohmen, New Prague, Minn., writes, "Am now tied in with two television outfits."

Training Features Television

Both my Servicing and Communications training include up-to-date lessons on TV principles. My graduates are filling jobs, making good money in both Radio and Television. Remember, the way to a successful career in Television is through experience in Radio.



EXTRA PAY IN ARMY, NAVY, AIR FORCE



Knowing Radio, TV, Electronics can help you get extra rank, extra prestige, more interesting duty at pay up to several times a private's base pay. You are also prepared for good Radio-TV jobs upon leaving service. Mail Coupon TODAY.

Tested Way to Good Pay

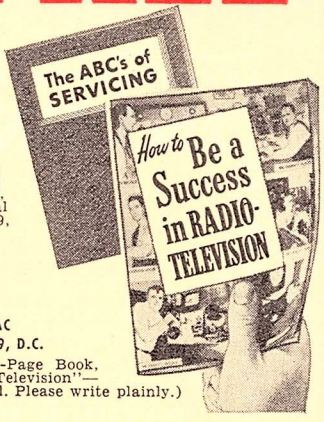


New, special TV kits furnished to build high-definition SCOPE . . . RF OSCILLATOR with flyback power supply . . . complete TV SET . . . many other units. You see pulse, trapezoidal, sawtooth wave forms. Get valuable PRACTICAL EXPERIENCE locating and correcting TV troubles. Mail coupon for facts, pictures and prices.

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64-PAGE BOOK AND SAMPLE LESSON FREE



ACT NOW! Send for my FREE DOUBLE OFFER. This card entitles you to Sample Lesson on Servicing; shows how you learn Radio-Television at home. You'll also receive my 64-page book. "How to Be a Success in Radio-Television." You'll read what my graduates are doing, earning; see photos of equipment you practice with at home. Cut out and mail card now! No postage needed. J. E. SMITH, President, Dept. 2AC, National Radio Institute, Washington 9, D. C. Our 38th year.

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WE PAY POSTAGE

Mr. J. E. SMITH, President, Dept. 2AC
National Radio Institute, Washington 9, D.C.

Mail me Sample Lesson and 64-Page Book, "How to Be A Success in Radio-Television"—both FREE. (No salesman will call. Please write plainly.)

NAME.....AGE.....

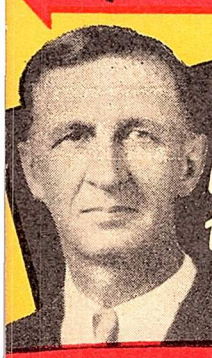
ADDRESS.....

CITY.....ZONE....STATE.....

Approved Under G. I. Bill

See other side ➡

Important! Tested Way to Good Pay! *See other side*



YES! I trained these men AT HOME



VIDEO OPER. WITH NBC

"I am a video operator employed by NBC. My duties here at WNBW have to do with Television control work."—Warren D. Deem, Arlington, Va.



$10 WEEK IN SPARE TIME

"Before finishing your course, I earned as much as $10 a week in Radio servicing, at home in my spare time."—S. J. Petruff, Miami, Fla.



INSTALLS, SERVICES TV

"Word traveled fast in regard to my N.R.I. training. Have been doing Television installations and servicing."—H. B. Mills, Washington, Ohio.



NRI-TRAINED MAN HONORED

"The N.R.I. Diploma is something to be proud of. People honor the N.R.I.-trained man. They say if you are trained by N.R.I. you know Radio repair business."...P. Purkiss, Pangburn, Ark.

America's Fast Growing Industry Offers You Good Pay—SUCCESS



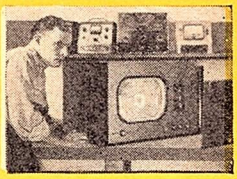
PRAISES NEW NRI COURSE

"Am employed with WLPM as Broadcast operator. Your NEW communications course shows the kind of equipment we use in our station." J. Bangley, Jr., Suffolk, Va.

I Will Train You AT HOME for Good Pay Jobs in RADIO-TV

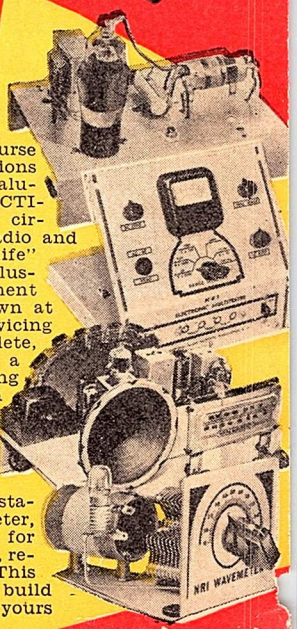
Television Is Today's Good Job Maker

In 1946 only 6,000 TV sets sold. In 1950 over 5,000,000. By 1954, 25,000,000 TV sets estimated. Over 100 TV Stations now operating. Authorities predict 1,000 TV Stations. This means more jobs, good pay for properly trained men.



Cut Out and Mail Today — We Pay Postage

Build Many Radio-TV Circuits with Parts I Send



With both my Servicing Course and my NEW Communications Course I send you many Valuable Kits of Parts for PRACTICAL EXPERIENCE with circuits common to both Radio and Television. They "bring to life" theory you learn in my illustrated texts. Some equipment from both courses is shown at right. As part of my Servicing Course, you build a complete, powerful Radio Receiver, a Set Tester useful in earning extra spare time money, an A.M. and F.M. Signal Generator, etc. In my Communications Course, you assemble a low-power Broadcasting Transmitter that shows how to put a station "on the air," a Wavemeter, an Electronic Multitester for measuring voltage, current, resistance, impedance, etc. This and other equipment you build with Radio Kits I send is yours to keep.

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A TRUE I. C. S. STORY *taken from an actual letter*



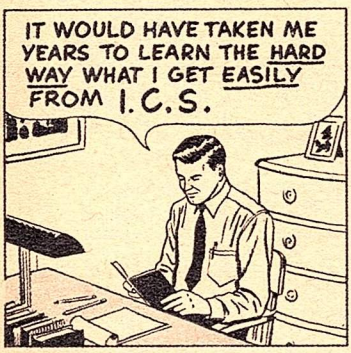
I was a World War II pilot . . .



A prisoner of war in Germany . . .



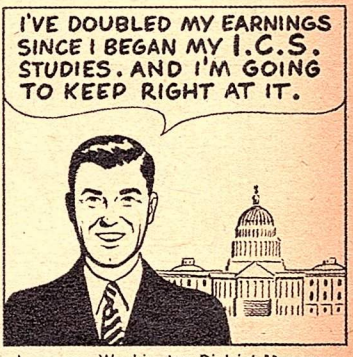
Back home, I was hired by National . . .



Studied with I. C. S. in my spare time . . .



I. C. S. sent reports to my employer . . .



I am now Washington District Manager.

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- ☐ Patternmaking—Wood, Metal
- ☐ Reading Shop Blueprints
- ☐ Sheet-Metal Drafting
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- ☐ Railway Training
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Kit includes all parts, instructions, radio tester, electric soldering iron, trouble-shooting guide, quizzes, television book, consultation service. $19.95 is complete price. Nothing else to buy. Everything you build is yours to keep. All parts and equipment guaranteed.

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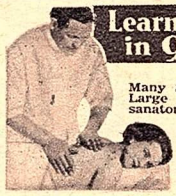
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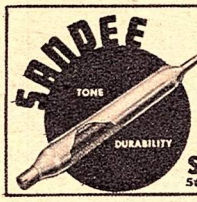
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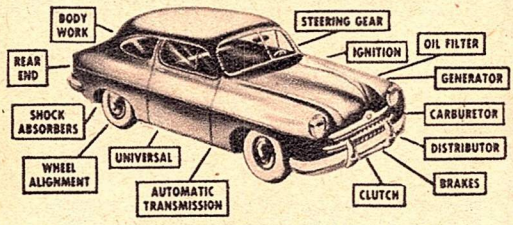
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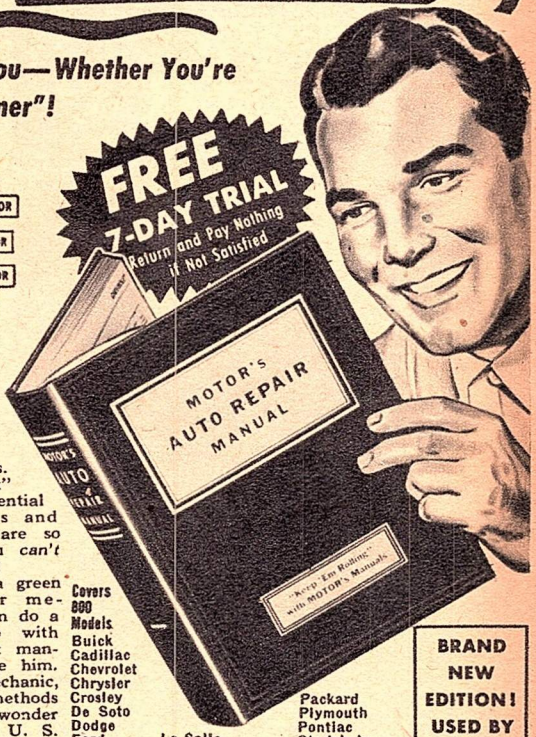


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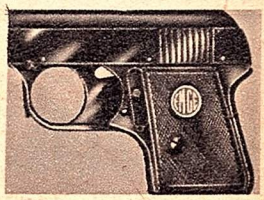
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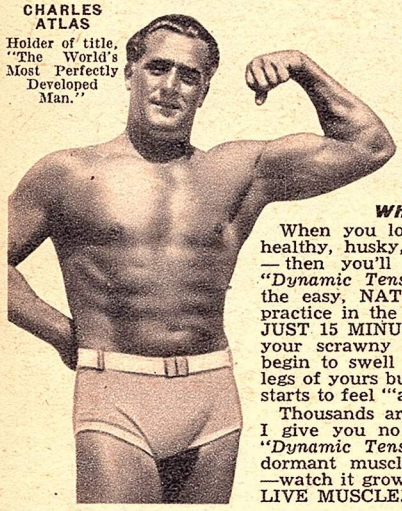
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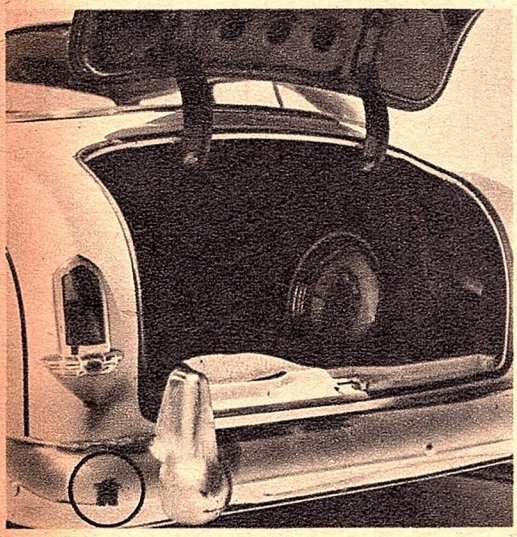
Dear Editor—

Use this letters column as you see fit—make it a complaint box, question box, suggestion box or even a soap box. But use it! Our only requirement is that you sign your name and keep 'em short, interesting and clean. Address mail to: MECHANIX ILLUSTRATED, Letters Editor, 67 West 44th Street, New York 18, N. Y.

Our Eagle-Eyed Readers

Is that Uncle Tom McCahill snapping his own reflection in the rear bumper of the Dodge Wayfarer on page 78 of the October issue?

Jack Weiss
Johnstown, Pa.



My, you're a clever one! From now on we can call him Tiny Tom.

Posing A Problem

Is it true that if the human race (or people) could manufacture food like the plant (or leaf) the food problems (or troubles) of the world (or earth) would be over forever?

Frank Vomastek
Perry Point, Md.

They sure would (or might be).

Lonely Hearts Illustrated?

Why don't you have in your magazine a page specially for people who want to make acquaintances? I'm a girl of 30 years old and like pleasure.

Louise J.
Quebec, Canada

That's just why.

Mysterious Pendulum

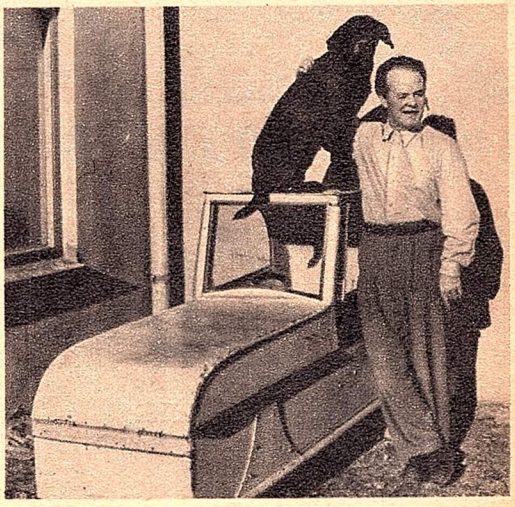
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Leslie Yuhasz
Cleveland, Ohio

Sorry, this is little out of our realm. But, have you tried your neighborhood medium?

Faster Than Joe?

Best greetings from a little town in Norway. My car is electric driven, has 24 hp and three wheels.



The big difference between my dog and Tom McCahill's is that my dog can easily outdistance my car.

William Nettum
Kristiansund N., Norway

[*Continued on page* 35]

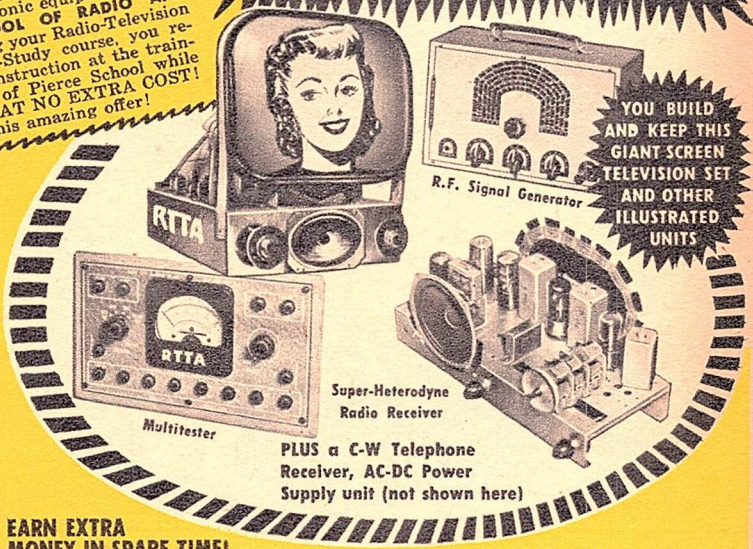


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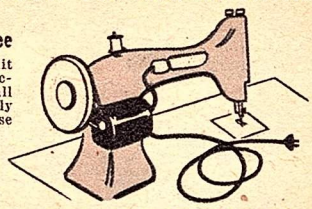
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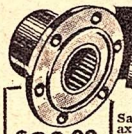
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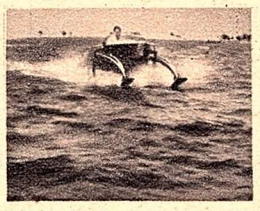
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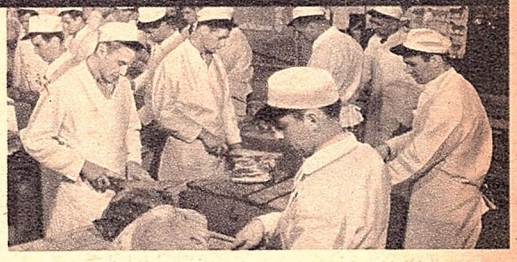
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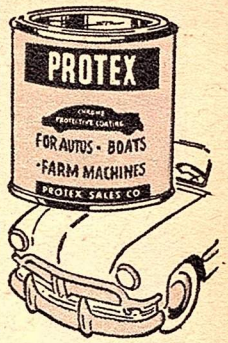
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Dear Editor—

[*Continued from page 30*]

More Moon Madness

I don't think that people who talk about going to the moon should be laughed at. I have studied interplanetary travel for two or three years now.

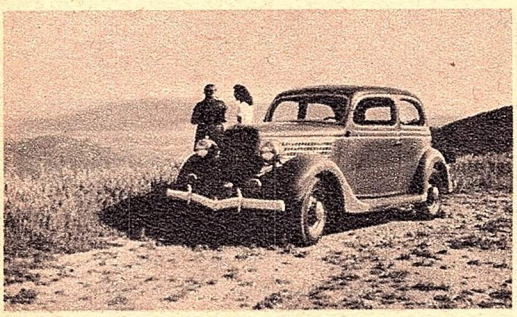
Everyone has his own opinion as to whether we can *ever* get to the moon or not. But, they did it in the movies didn't they?

D. Zamzow
Beaver Dam, Wisc.

Sure, but movies are better *than* ever.

Who Needs A Model A

Here's my answer to pleas for the return of the Model A. For $600 I had my '35 Ford



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James E. Neil.
Santa Barbara, Calif.

Third Hand Information

We were very pleased to have you select our THIRD HAND Hammer Nail Clip as your November prize gadget.

However, an error has been made in crediting me as the inventor. While of course I would like to be the inventor, the fact remains that my partner, Fred F. Dillon, is the actual inventor. The photo in the lower right hand corner of page 99 is inventor Dillon, too.

Albert M. Spors
AMSCO Company
Le Center, Minn.

Sorry. We hope you're still partners.

[*Continued on page 37*]

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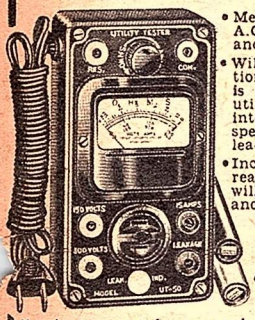
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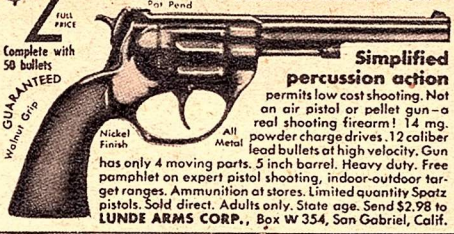
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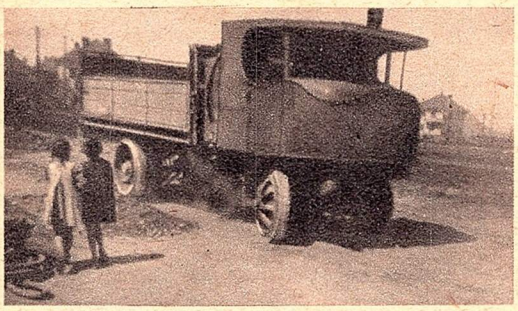
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Dear Editor—

[Continued from page 35]

Truck From Titoland

Here's a 1925 steam powered Santinel truck made by Skoda. Town Streets Maintenance Service in Ljubljana, Yugoslavia, keeps her rolling in good condition. Top speed is—hold



your breath—five mph and she consumes half a ton of coal in eight hours.

Ako L. Bevc
Ljubljana, Yugoslavia

New Style For Engines

I notice that reader John E. Babione is looking for a substitute for a fanbelt (Dear Editor November '51 MI page 24.) Well, a few years ago I was traveling in Arkansas in a 1932 Austin when my fanbelt broke. So, I put my own belt on and it worked fine.

But, I had to sit in the car for the rest of the trip.

J. Woody Stovall
Benton, Ky.

That's all very well for you. But what about drivers who wear suspenders?

On Behalf Of Farmers

In your November column, Mr. West, the sender of the pinned-up car, stated that the owner was evidently a farmer. This policy of calling any queer character a farmer is very outdated and I despise hearing it.

The American farmers, the people who produce the food for Americans and a good part of the world, are mechanical-minded, intelligent people!

W. R. Bauer, Jr.
Niles, Mich.

[Continued on page 41]

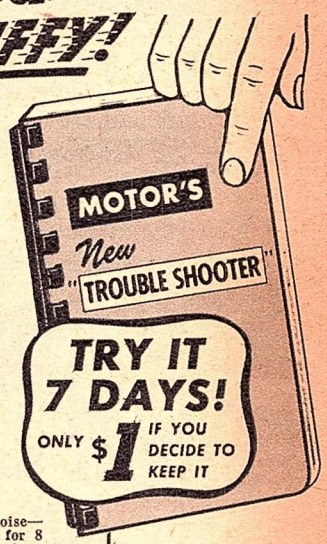


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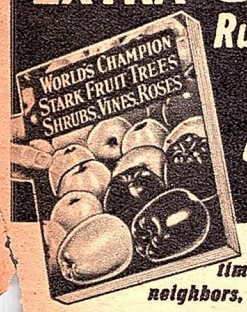
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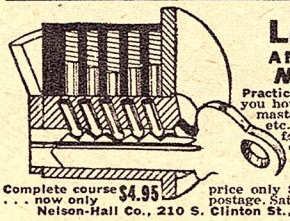
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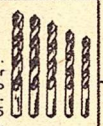


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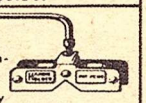
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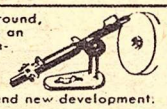
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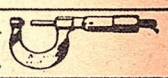
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Dear Editor—

[*Continued from page 37*]

Our Lincoln Reader

Pardon, but John Wilkes Booth fired at Lincoln from a box and *then* leaped to the stage of Ford's Theater. Page 172 (America's Spooks, November '51 MI) says he fired from the stage. Right?

C. B. Loomis
Manhattan Beach, Calif.

Yup.

MI Sportster Pro & Con

The MI Sportster in your November issue (page 106) was great. Let's see more features like this in MI.

Allin J. Larkis
Philadelphia, Pa.

We were horrified to see what you had junked in order to put together the atrocious creature you call the MI Sportster. For 500 bucks and that fine '32 Ford we could have, with only minor body changes and major engine changes, made a car which would have shown a set of exhaust pipes to your animal.

Clay Lynn West
Paul Abat
Longview, Tex.

Whaddya Want In MI?

How about more furniture and wood projects instead of all this mechanical stuff?

Jim Powers
Seymour, Ind.

You ought to have a page like Model Makers Roundhouse devoted to model airplanes.

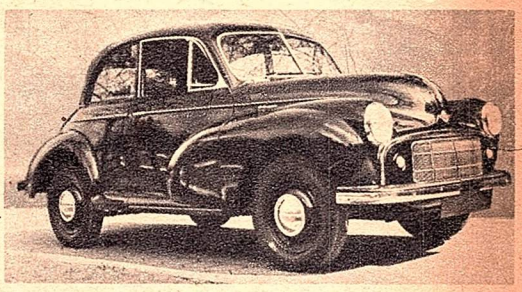
Mike O'Donnell
Alexandria, Va.

I object to the way everyone says more this and less that. You can't please everybody so please keep MI the way it is: tops.

Dick Madigan
Corning, N. Y.

Well, thanks for the praise but we feel the real way to keep MI tops is to listen carefully to what our readers say and use their opinions as a guide in making our own decisions.

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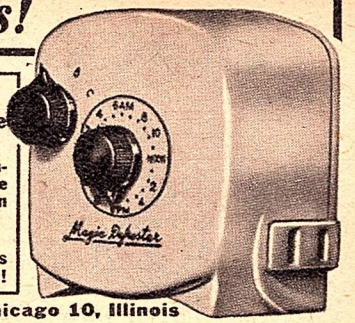
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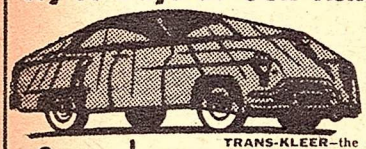
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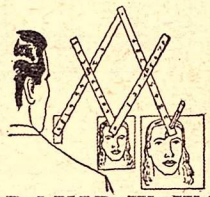
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Of MECHANIX ILLUSTRATED published monthly at Greenwich, Conn., for October 1, 1951.

1. The names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Fawcett Publications, Inc., Greenwich, Conn.; Editor William Parker, Larchmont, N. Y.; Managing Editor, Ralph Daigh, Pelham Manor, N. Y.; Business Manager, Gordon Fawcett, Greenwich, Conn.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Fawcett Publications, Inc., Greenwich, Conn.; W. H. Fawcett, Jr., Norwalk, Conn.; Marion Bagg, Kansas City, Mo.; Roger Fawcett, Greenwich Conn.; V. D. Fawcett, Greenwich, Conn.; M. B. Fawcett, Norwalk, Conn.; H. A. Fawcett, Greenwich, Conn.; Roscoe Kent Fawcett, Greenwich, Conn.; M. F. Fawcett, Greenwich, Conn.; M. B. King, Oxnard, Cal.; Gloria Leary, Oxnard, Cal.; V. F. Kerr, Santa Barbara, Cal.; Mrs. Eva Roberts, Seattle, Wash.; Fawcett Publications, Inc., Greenwich, Conn.

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4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

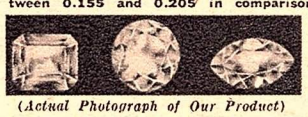
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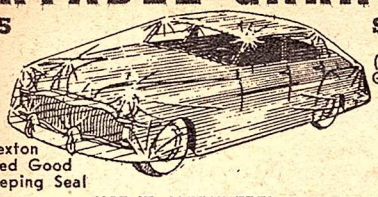
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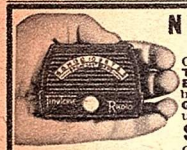


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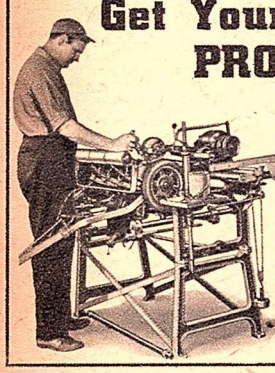
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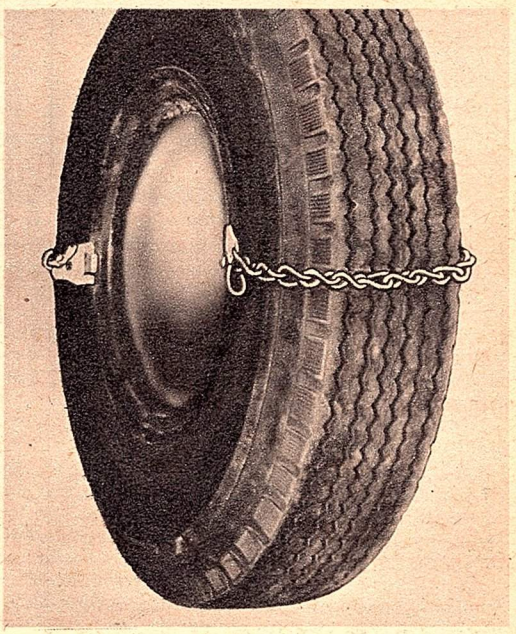
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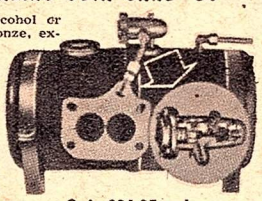
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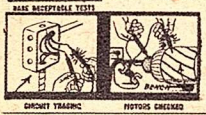
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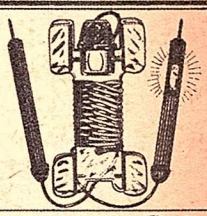




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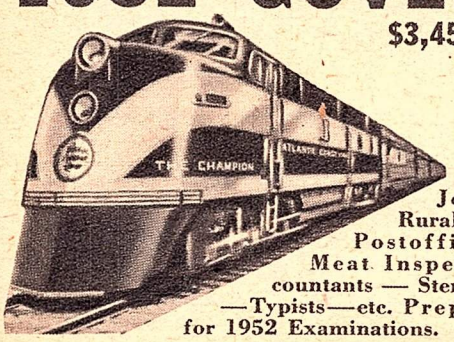
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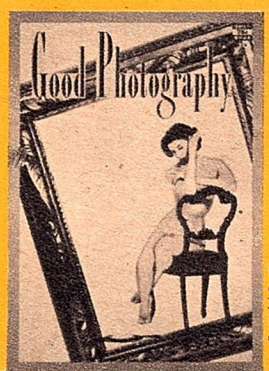
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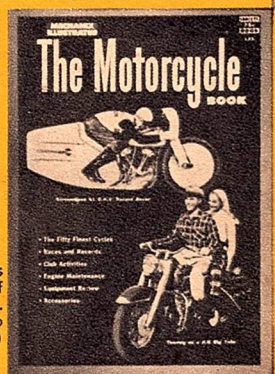
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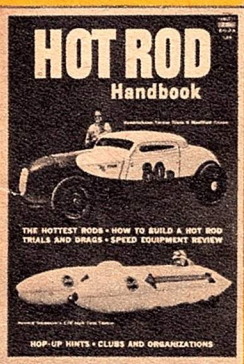


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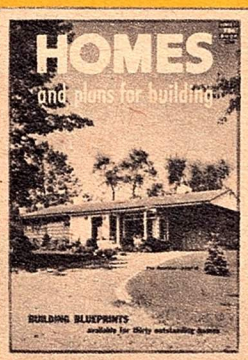
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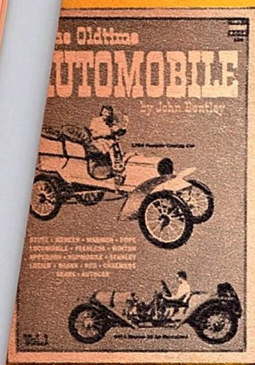
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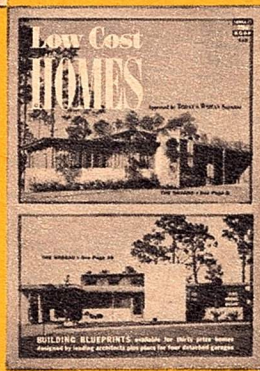
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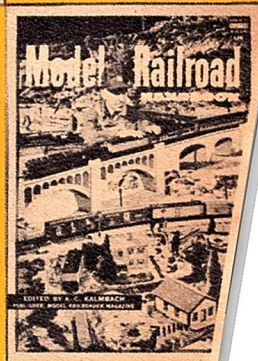


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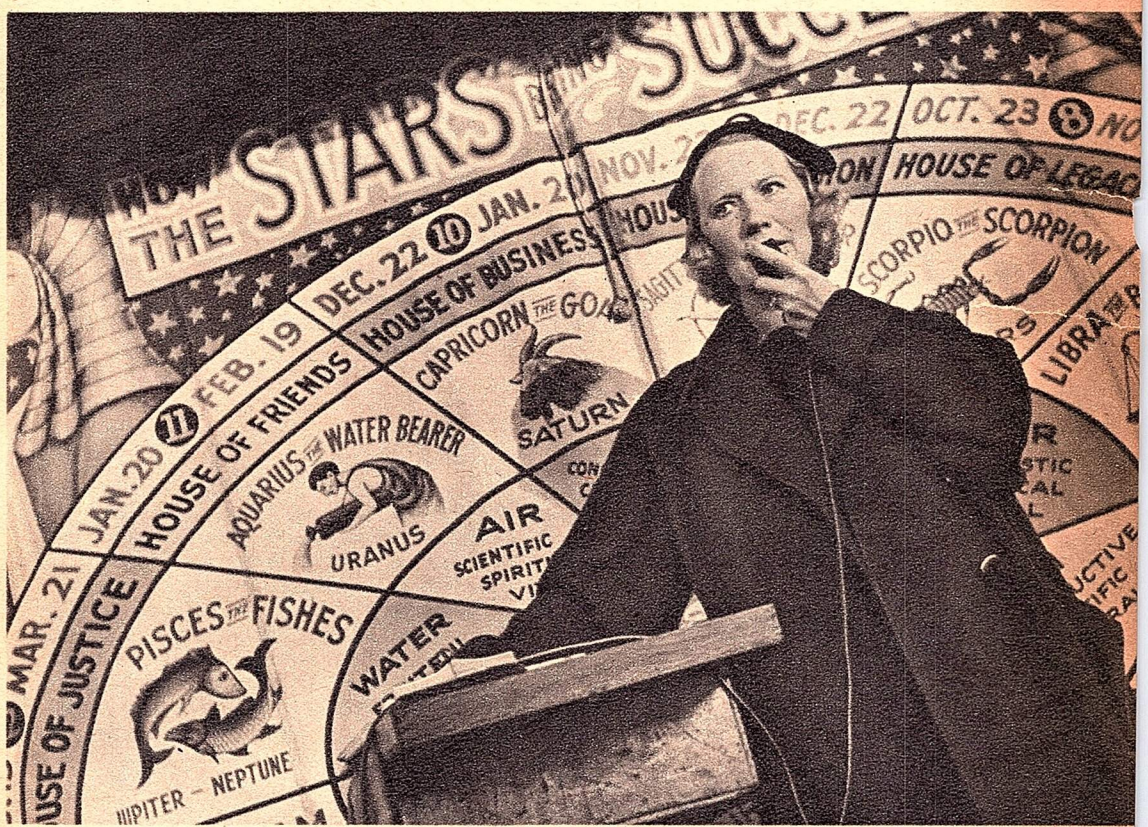




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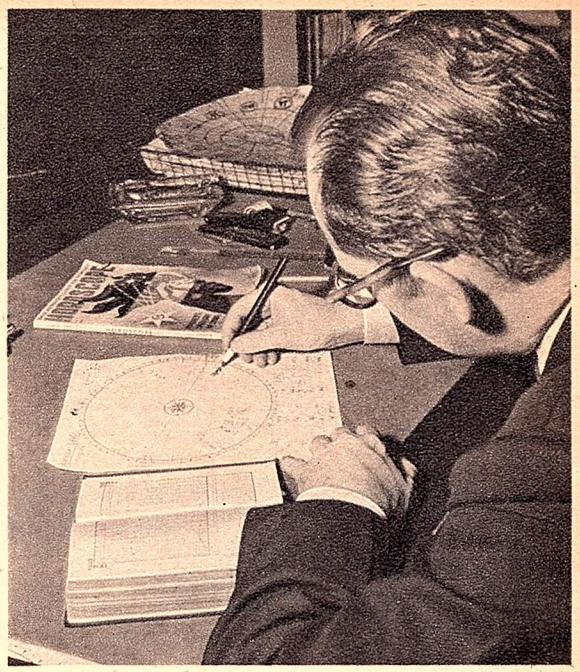
By Lester David

CAN the stars foretell your future? Can the sun, moon and planets pierce the veil which shrouds the years ahead and tell you if you will become a millionaire, warn you of tragedy swirling your way, predict how long you will live?

Three million people in the U. S. and countless millions the world over fervently believe they can. These are the devotees



In his sedate office, astrologer Charles Jayne, Jr., carefully questions a client as to the exact time, place and circumstances of his birth in order to use this information to prepare a horoscope by which to guide all his future actions.



An accurate horoscope entails a great amount of detailed work in plotting the exact positions of the planets during crucial periods in the client's life. Here, Jayne uses a series of mathematical tables as he draws the astrological chart in his office.

Predictions for 1952

One of the nation's foremost astrologers, Charles Jayne, Jr., vice president of the Astrologic Research Society and one of the few men who predicted the re-election of President Truman in 1948, makes the following forecasts for 1952:

World War III will break out between Russia and the Western powers in the first half of 1952.

The war will be short—of two or three years' duration—and will result in victory for the Western powers.

The war will accelerate two moves of profound significance to the world. These are: a political and economic union between North America and the nations of western Europe before 1960; a revolution inside the defeated Soviet Union some time in the 1960's, resulting in the breakup of the Russian state.

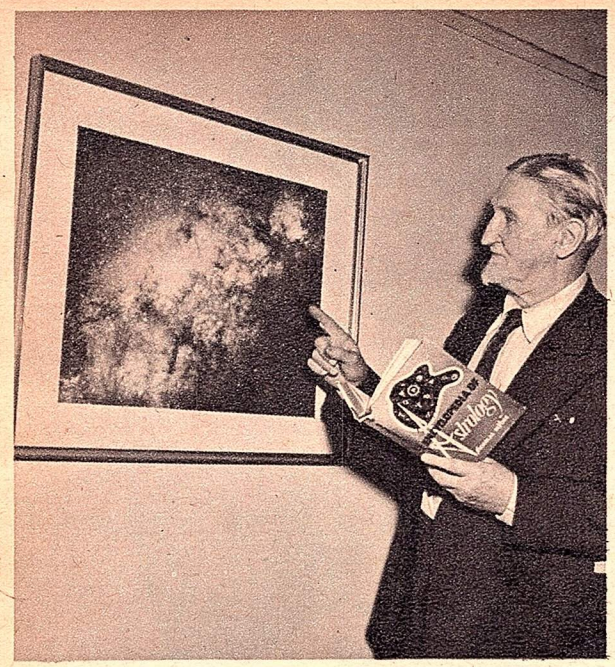
of astrology. They include industrial tycoons who won't sign a contract or build a factory unless their horoscopes say they should, top diplomats and rulers eager to know about world policy trends, and Hollywood stars who won't start a film without a nod from the heavenly bodies.

Recently, the president of one of New York City's largest banks, accompanied by the head of a far-flung mining company, came to the office of astrologer W. Kenneth Brown in Manhattan for advice. They had an opportunity to join in the purchase of a vast stockpile of metals in England, but if the venture failed it would be a great financial blow to both. Was it a good idea or wasn't it? What did the stars say?

Mr. Brown, whose clients include some of the top-flight names in business and finance, charted horoscopes for his visitors, studied them carefully and several days later gave them this advice:

"Go ahead with the deal; it will turn out successfully for both of you."

But to the mining company president he issued this solemn warning: "Saturn is coming in opposition to the sun on your



Nicholas deVore, president of the Astrological Research Society and author of an encyclopedia of astrology, has a theory that the Milky Way is of much greater importance in the horoscopes of individuals than most astrologers realize right now.



Amazing Evangeline Adams was the high priestess of modern astrology. She predicted many historical events such as the 1929 stock market crash and the attempted assassination of F. D. Roosevelt. Her astrologer husband correctly forecast her death.

horoscope and it means your health and vitality will be adversely affected. I advise you to retire and take it easy after you complete this deal, otherwise the strain of work might be too much for you."

The mining executive went to England and subsequently made a fortune on the metals deal. But he did not heed the second bit of counsel. Three months after he returned to this country he dropped dead of a heart attack!

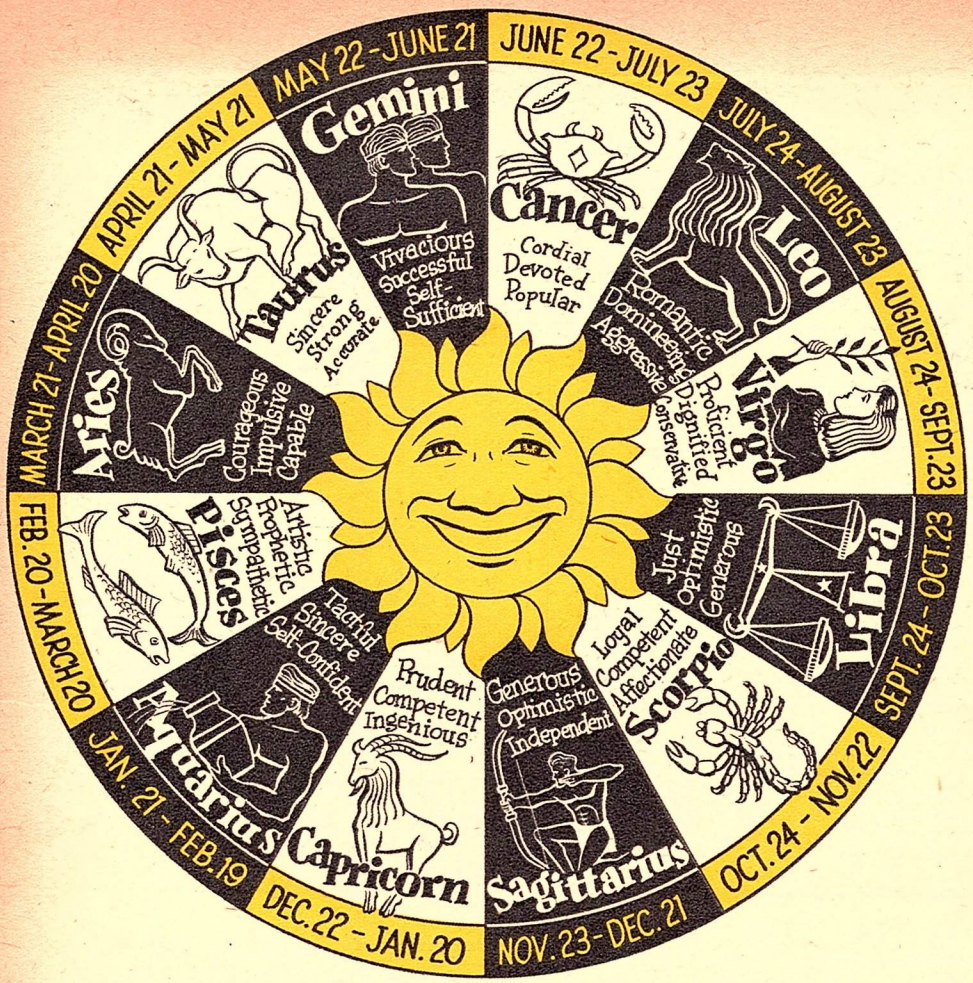
Was it coincidence? Was it superstitious mumbo-jumbo? Or was it the inevitable influence that powerful cosmic forces exert on the life of every individual on earth?

Whatever you believe, this much is certain: time and again predictions, ranging from forecasts on world events to prophecies on an obscure individual's business problems have come true with startling accuracy. Millions of people attest to it—housewives, store keepers, teachers, insurance men. They seek guidance from the heavens on their careers, health, love affairs, the proper time to have a baby, get a divorce and even when to hit the boss for a raise.

There are at least 25,000 practicing astrologers in the U. S. providing this guidance and they have established a fantastically thriving business in the process. They receive fees ranging from $25 to $250 for consultations, many of the more exclusive ones drawing checks as high as or higher than those of eminent surgeons and psychiatrists. One astrologer, who practices in Boston, got a total of $50,000 from Wall Street operators alone in just one year. Another, who handles the socially elite, regularly earns $100,000 a year.

Scientists have attacked astrology in words both genteel and sharp, labelling it everything from "a discredited science" to "the slickest fraud ever perpetrated on a gullible populace." The Boston and Cambridge branch of the American Association of Scientific Workers, following an intensive investigation by a special committee, concluded that astrology is wholly without scientific foundation, has long since been superseded by present-day knowledge and that "our fates rest not in the stars but in ourselves."

Professor Adolph E. Meyer of New York



Astrological chart is supposed to reveal character of persons born under each sign.





During World War II, England realized that Adolf Hitler, above left, was taking the advice of his astrologer before making decisions so they placed astrologer Louis de Wohl, above right, at the head of their Psychological Research Bureau. He thus helped the Allies anticipate many of Hitler's moves.

University declared witheringly: "Each year astrologers rake in something over $200,000,000, soothing the worries and woes of the U. S. in reassuring mumbo-jumbo that Einstein himself would have a hard time following."

The astrologers, on the other hand, battle back furiously against their critics. They point to astrology's 4,000-year history and declare that science cannot casually dismiss the records and observations of 40 centuries. They claim astrology is as much a physical science as geology, depending on ascertained facts. They believe in it, as Grant Lewi, a noted practitioner, puts it, "for the same reason others believe in the multiplication table or the intoxicating effects of alcohol—it works."

And they use as their sharpest weapons of rebuttal such amazing stories as these:

In Chicago, a manufacturer had a chance to buy a warehouse full of high-quality cloth at a ridiculously low figure. It was a steal at the price—he couldn't possibly go wrong. But he sought advice from his astrologer. To his utter astonishment, the planets advised firmly against the investment. He wrestled with the problem for a week and the lure proved too strong—he bought the stuff.

A few days later, with the contracts signed and delivered, a fire broke out in the warehouse, destroying every bolt of cloth inside. But the full extent of the catastrophe was yet to come: the fire insurance on the merchandise had lapsed and the buyer suffered a total loss on his purchase.

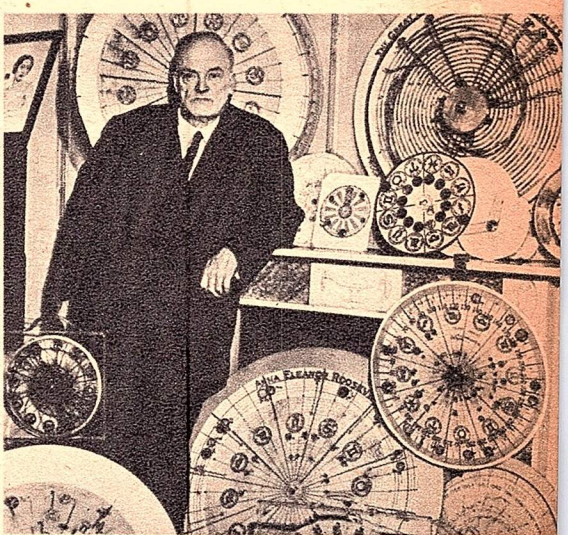
Myra Kingsley, astrologer to a host of theatrical luminaries including Basil Rathbone, Conrad Nagel and Gladys Swarthout, predicted the end of the European and the Japanese war almost to the month. Hellene Paul, a New York astrologer, predicted King Edward's abdication and his marriage to Wallis Simpson. And in January of 1940, she said Queen Wilhelmina of The Netherlands would be ousted by Hitler. In her book, *Astrology, Its History and Influence in the Western World,* published in 1942, Ellen McCaffery wrote that America's part in the war will last four years and that "victory for the Allies comes in sight after January, 1945." She hit it on the nose.

Miss Kingsley once told a young girl her stars showed she was destined for a career as a movie actress—but she also had two brothers, of whose existence she was totally unaware. The girl refused to believe the second half of the story—refused until she discovered shortly afterward that she had been adopted as a child and her real father had remarried and was raising two sons. Later she went to Hollywood and you know her today as one of filmdom's reigning movie queens.

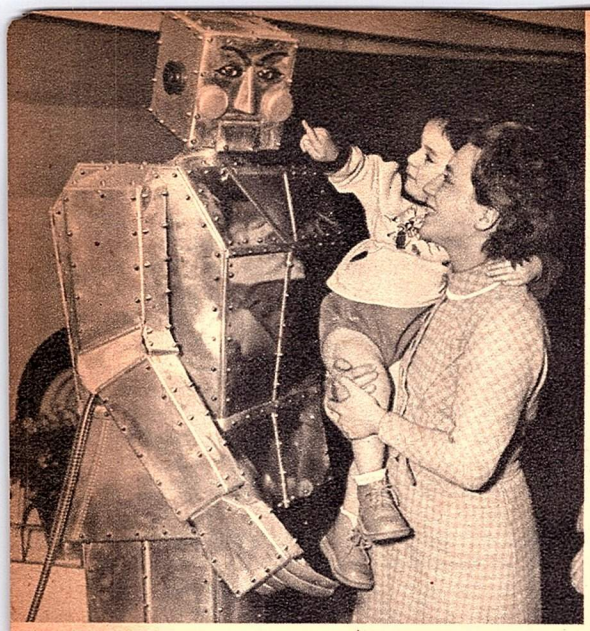
Nicholas de Vore, president of the Astrologic Research Society, once predicted that a newborn baby would fall into a coma on the fourth day after birth. Despite scoffing by the doctor on the case, the mother who had requested the horoscope insisted that a special nurse be assigned to watch the baby constantly. The symptoms came on schedule and the [*Continued on page* 174]



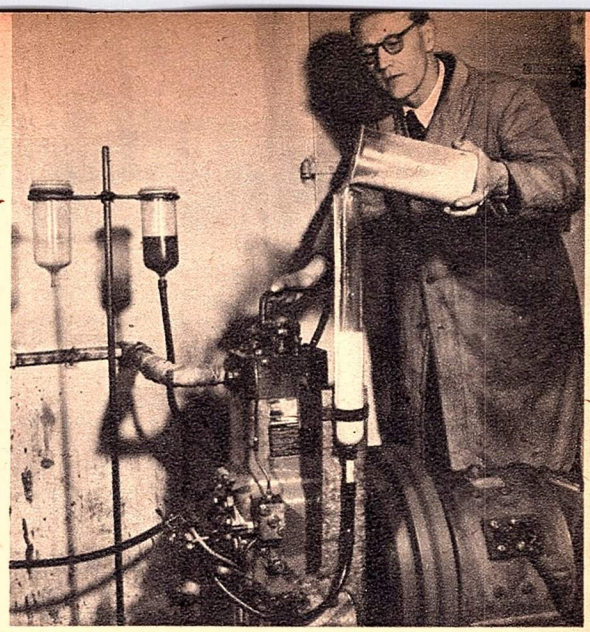
Harvard professor Bart J. Bok recently issued a report attacking astrology as completely unscientific and harmful to social and scientific progress.



Specialist in family horoscopes, astrologer J. Arthur H. Walker stands among some of his casting and delineating machines for great personalities.



Talking Robot at a recent Paris auto show also walked, shook hands, flickered its eyelids and puffed its cheeks. How it answered questions is a secret. Skeptics say a man nearby answered through a mike.



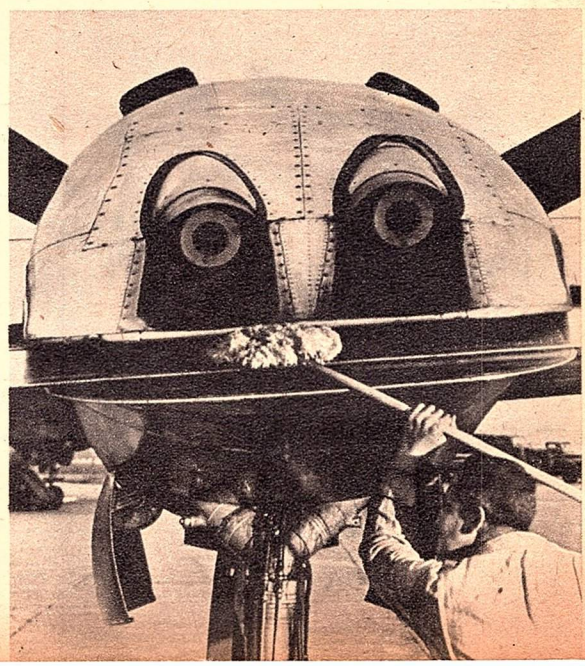
Water Fuel for diesels is the invention of a Hamburg, Germany scientist Dr. Christian Groeber. He uses 70 per cent water, 30 per cent oil, "secret" chemicals. This engine used it successfully in tests.

NEW in SCIENCE

Leica Turret enables the photographer to change lenses quickly by means of a revolving lens mount similar to the movie camera system. It was displayed in Berlin, Germany and is expected here shortly.

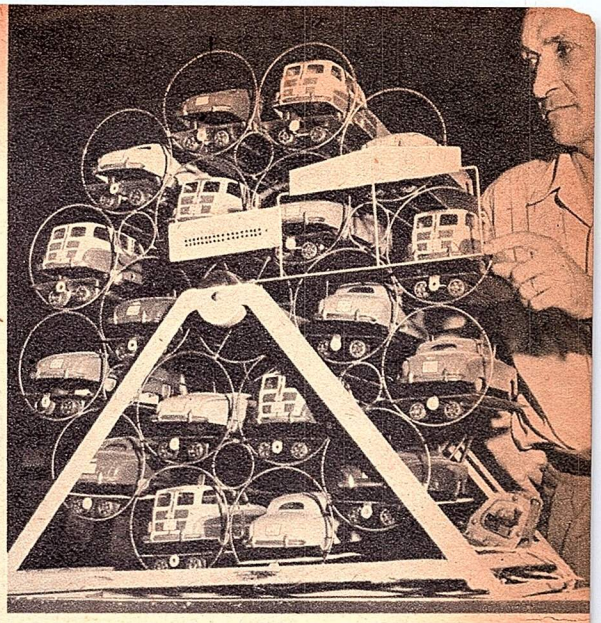
Man From Mars having his teeth brushed is really stern view of an engine on new Convair airliner. American Airlines mechanic Al Stern is washing it down. Eyes are exhaust jets which add to thrust.







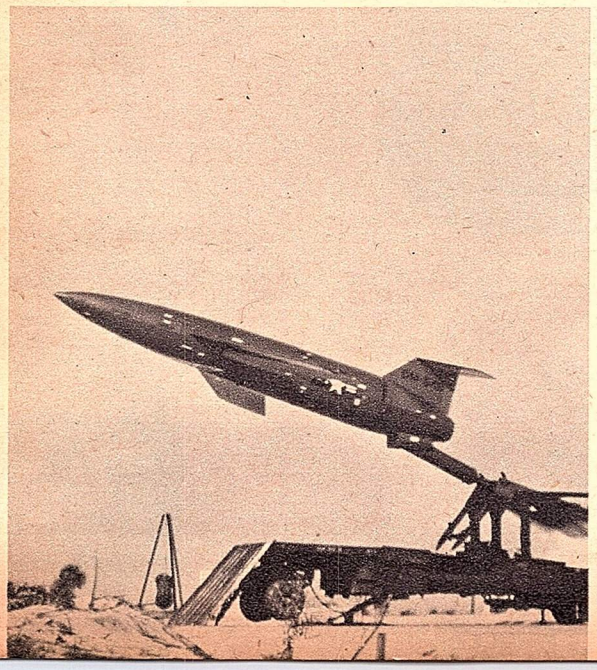
40-Pound Accordion is Italian invention which features rheostat-controlled electric blower substituting for usual push-pull. It comes apart in two units for carrying. Diego and Gobbi Co., Piacenza, Italy.

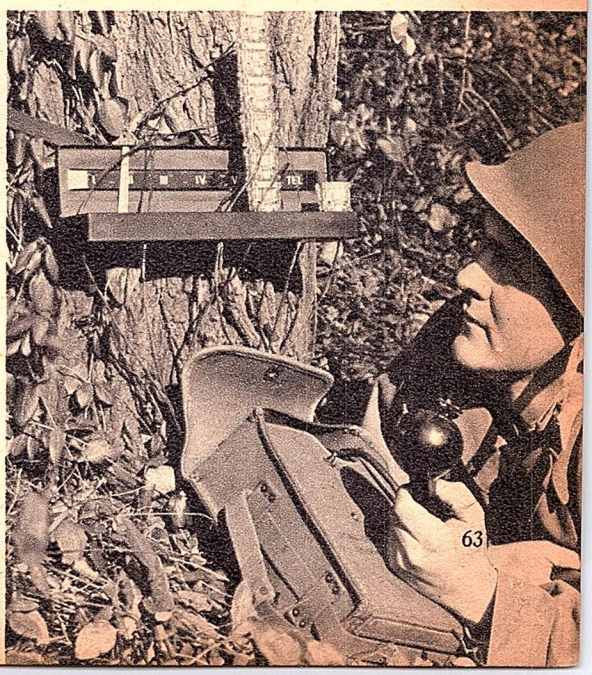


Ferris Wheel Parking can deliver a car a minute, holds 36 in 1,430 sq. ft. Seven horsepower motor turns wheel while cars remain level. Prof. R. Vailati of Bergano, Italy demonstrates with a model.

Pilotless Bomber called B-61 Matador requires no runway for take-off, is launched from an inclined ramp with roar from its auxiliary-thrust rocket. Plane is on trial at Missile Test Center, Cocoa, Fla.

Mini-Switchboard new gadget for the Signal Corps, enables six persons to take part in a joint conference call. Here a soldier has set up board on tree and is calling parties in to talk on field phone.





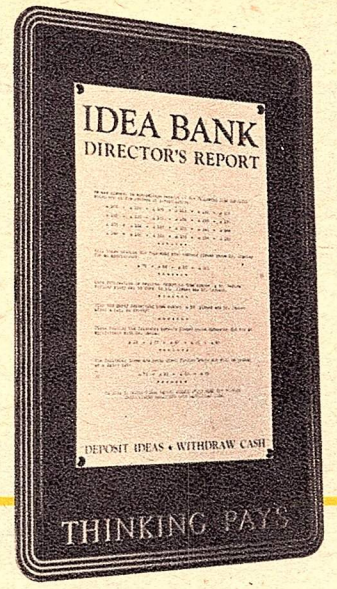
$75,000,000 FOR YOUR IDEAS



Idea bank, left, is brainchild of LeRoy G. Mills Company. It puts the soliciting and judging of suggestions on a completely professional basis. Periodical reports are made to the workers, too, right.

American industry is discovering rapidly that suggestion boxes can be gold mines for both employer and employe.

By Harry Kursh





Cartoon illustration calls attention to the suggestion box for employes of the Aeroproducts division of the General Motors Corp. located at Dayton, Ohio.

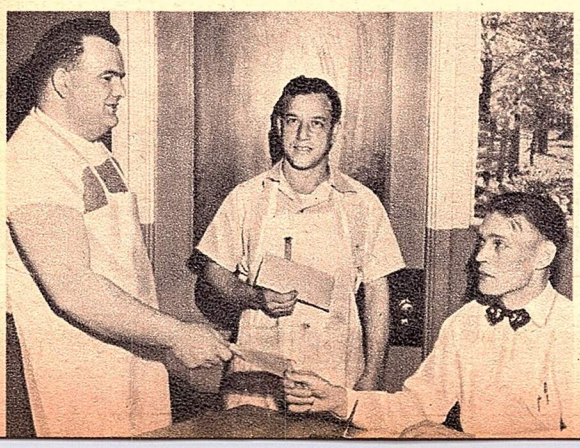
HAVE you ever laughed at that little box in the corner of your factory or office —the box marked SUGGESTIONS? Well, don't look now, but you've been laughing at $75,000,000 a year. And that's only a conservative estimate for the rate at which thousands of people, from office clerks to machinists, have been cashing in on suggestion-box systems all over the country.

Up until World War II, 95 per cent of all suggestion-box systems were a complete flop. Few people ever paid any attention to them. In fact, less than 160 companies even bothered to use them. Then, all of a sudden, an idea-hungry American industry decided to fatten up by putting suggestion systems on a professional basis. And today more than 10,000 companies, big and little, are out to buy your ideas.

General Motors, for instance, paid out over $2,000,000 in less than 30 months for those little slips of paper dropped into its suggestion boxes. In one small New England plant, a total of $140,000 was given out for 1,237 suggestions in less than two months, one employe hitting pay dirt 71 times, another 63 times.

Still laughing? Then take a look at Gordon Londio. Working in an Ohio machine shop, he thought he knew how to handle a bronze casting more efficiently than the way he had been doing it under company instructions. One day, he put his idea down on paper, folded it neatly and

Highest suggestion-box award ever paid by Bausch & Lomb Optical Company—$5,230—was presented recently to Charles McGill, left, and Neil Bernard, center, by plant manager Walter Sether, right.



Idea for obtaining four instead of three flanges for turbo-jet engine from the same "pot" saved Westinghouse Aviation Gas Turbine Division much money and earned employe Morton Gorman $1,950.



walked to that little box marked SUGGESTIONS, the very same box that he had passed a thousand times on his way to the drinking fountain. He hesitated at the box for a moment. Then, smiling, he dropped in the paper.

He didn't have to wait long. It seems the company liked the suggestion and in his next pay envelope he found the tidy sum of $28,000.

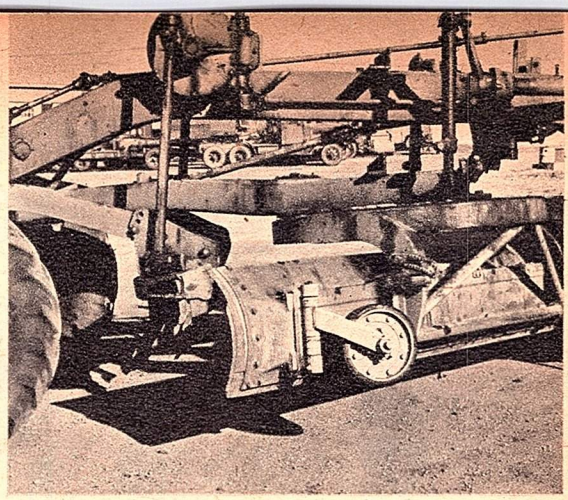
Actually, the suggestion box has been turned into a big business because top executives have learned that paying for ideas through an established system known to all can be profitable to them as well as their employes. In most cases, the system today is to give you from 10 to 50 per cent of whatever savings or profits a boss makes out of putting your idea into effect for at least one year.

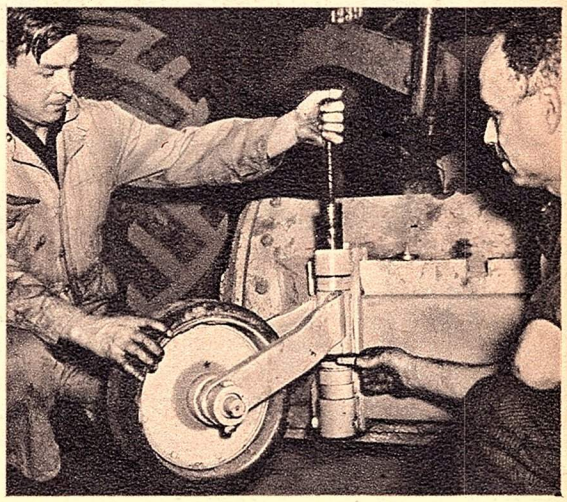
Recently, in a plant making bandages, an elderly woman, who had been wrapping them in two short pieces of wax paper for 20 years, suddenly thought how much easier it would be if the company used just one long piece of wax paper. It would serve the same purpose, she thought, except that she would not have to reach for a piece of paper twice.

So, she dropped her idea into a suggestion box. It netted her $21,000 because company cost accountants figured that's how much they would save the first year and each year after that by accepting her suggestion.

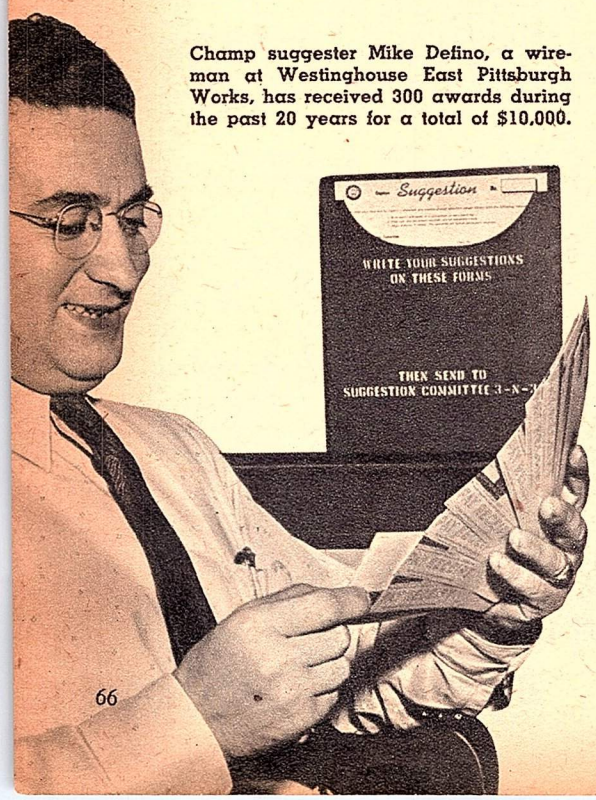
Sometimes, the idea can be something you've been griping about for years. An ex-G.I. working as a typist for one of the nation's oldest mail-order houses griped over the fact that, like in the Army, he was required to make four carbon copies of everything.

Discussing it with other employes, he learned that at one time his company actually had a need for so many copies. But the need had long since expired and everyone still was making four copies out of habit, using one and placing the rest in a dead file. So, on a slip of paper he wrote: "We don't need four carbon copies any more. Why don't you post a notice telling everyone and do away with it?" Then, he dropped it in the nearest suggestion box.

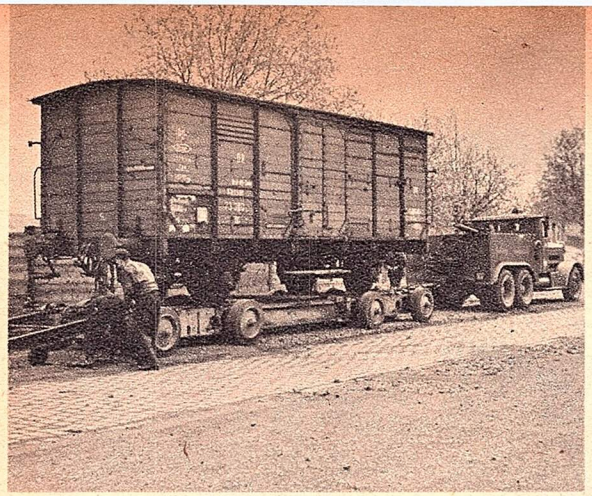


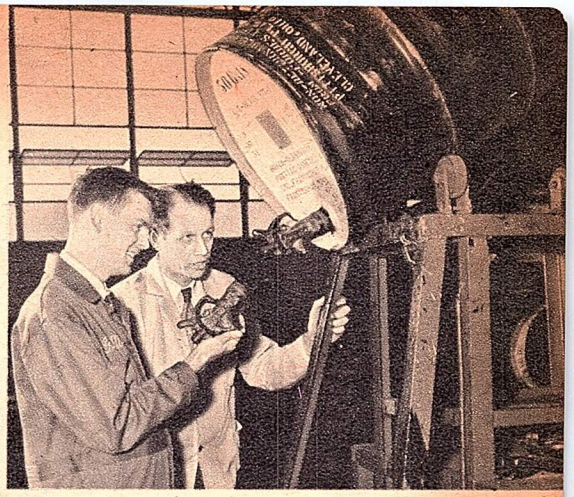


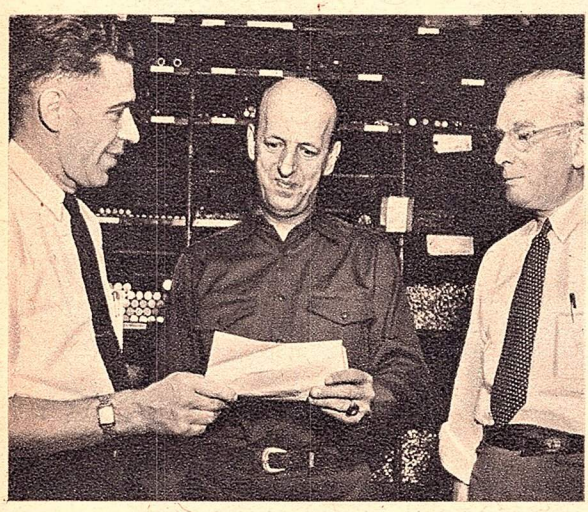
Civilian employe Russell E. Hohnhorst of the Wright-Patterson Air Force Base suggested that carrier wheels, adjustable to any desired height, be installed on the blades of snow-removal equipment. The Air Force gave him a $300 reward.



Champ suggester Mike Defino, a wireman at Westinghouse East Pittsburgh Works, has received 300 awards during the past 20 years for a total of $10,000.









Flat bed trailer for transporting freight train, top, direct to unloading point was $275 suggestion of Charles Busey with Army at Wurzburg, Germany. Owen Woodworth, above center, got $135 for an idea and $1,450 more when production increased.

Curved siphon for getting an extra pint of paint from drum won $195 for Robert Gorman, top left, of General Motors. Another employe of the company, J. J. Stewart, above, turned in a suggestion for straining sweepings and was awarded $260.26.

Soon, his idea was accepted and the company figured that with savings on time and paper they would be preventing a waste of $12,000 every year. He got 25 per cent of the first year's savings, a neat $3,000 for that simple thought.

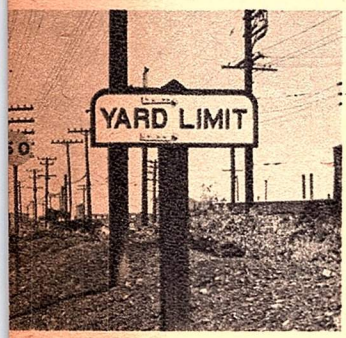
A worker in a Connecticut rubber factory made a suggestion for handling certain rubber products that had to be baked in an oven, then taken off a rack. Somewhat embarrassed, he laughed when a plant engineer came around to tell him that his suggestion would save only about two-thirds of a second on the handling of each product. But the laugh was not on him. Figuring two-thirds of a second on each product over a year, the company engineer said the suggestion would be accepted because it would save exactly $50,040. And the rubber worker got ten per cent of that on his next pay check.

Last June, Owen Woodworth, employed at Eastman Kodak Company in Rochester, N. Y., got a $135 check for saving time in coiling 400-foot cans of film. It was based on what the company expected to save on the first year's production. But when the production schedule was unexpectedly increased, he got an additional check for $1,450, making a total of $1,585.

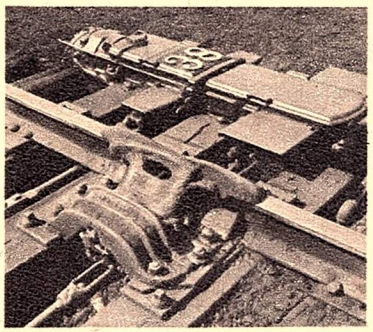
At the same plant last year, Virgine M. Taylor and Wallace E. Seils each brought home an extra $1,100 check for telling the company how it [*Continued on page* 180]

Railroad Sign Language

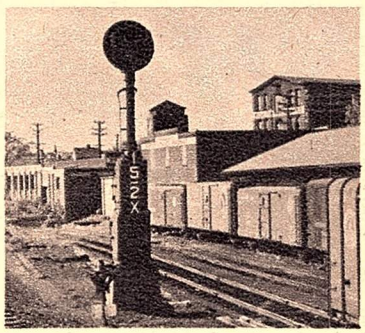
Before reading answers, see how many you know.



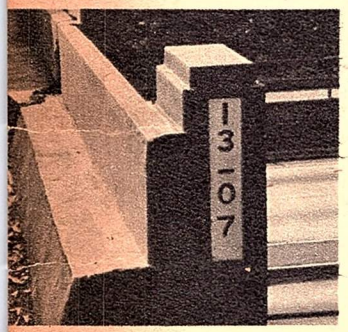
Alert! Beyond here main line may be used for switching.



Switch number corresponds to number on tower switchboard.



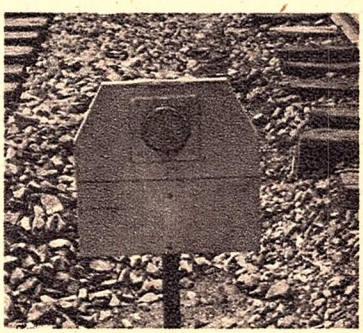
2X: first signal eastbound (odd nos. west); 15th mile.



Bridge marker: 13.07 miles out of Jersey City on Erie line.



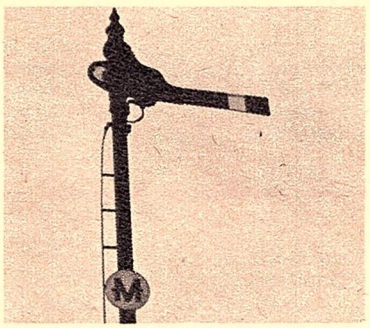
Slow order sign: maximum speed 25 mph through section.



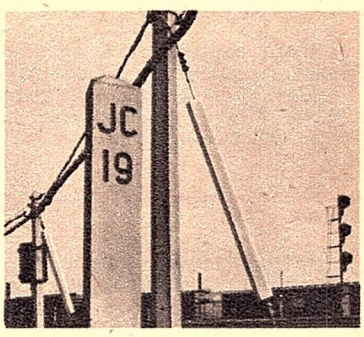
Temporary slow sign, yellow, placed at cause of slow order.



Maintenance: outside curve rail raised ½ in. over inside.

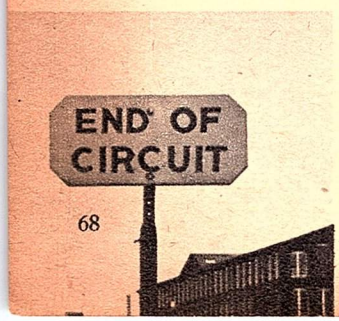


M: manually operated signal. Arm says, "Stop and Stay."



Beginning of 19th mile westward from Jersey City on Erie.

Beyond here switch cars work signals, hold up auto traffic.



Degree of curve: zero degrees, 15 minutes of angle (¼ degree).



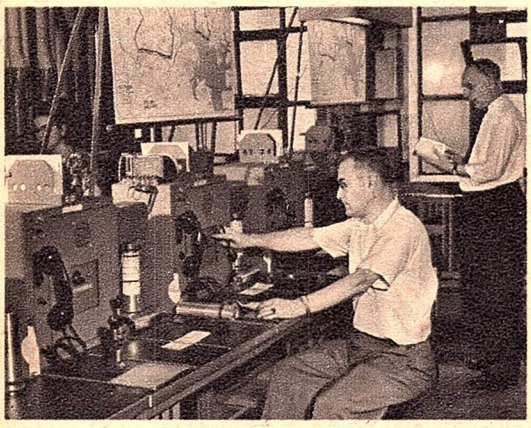
Engineer must whistle warning, crossing ¼ mile away.





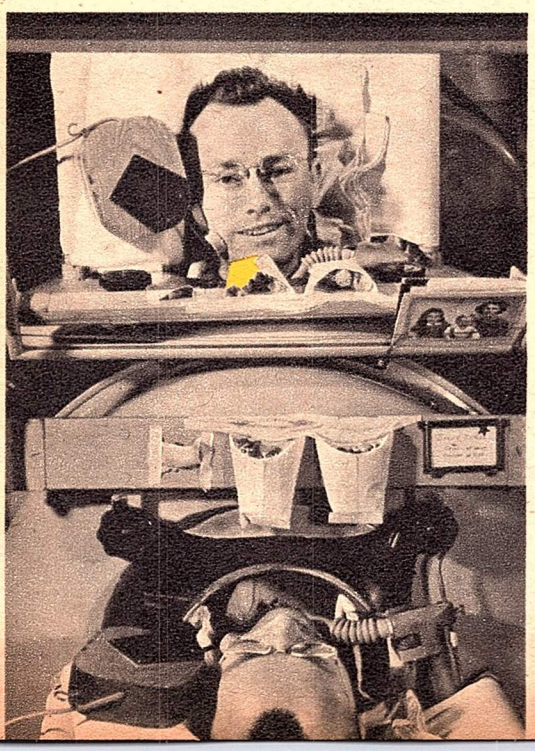


Courtesy Sunday Sun Magazine



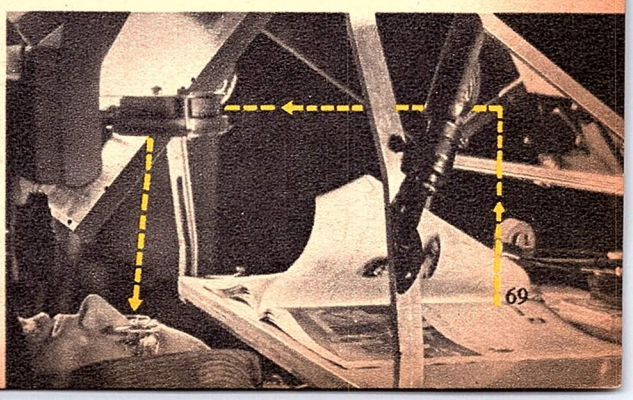
Telecar

BALTIMORE messengers are pulling their telegrams out of thin air. The city where Sam Morse sent the first telegraphic message over 100 years ago now has six Telecars, roving station wagons each equipped with two-way radio and a Telefax printer. When a message arrives, the dispatcher radios the driver to speed to the address. Then he wraps the message around a cylinder in the transmitter and facsimile is received in car en route. •

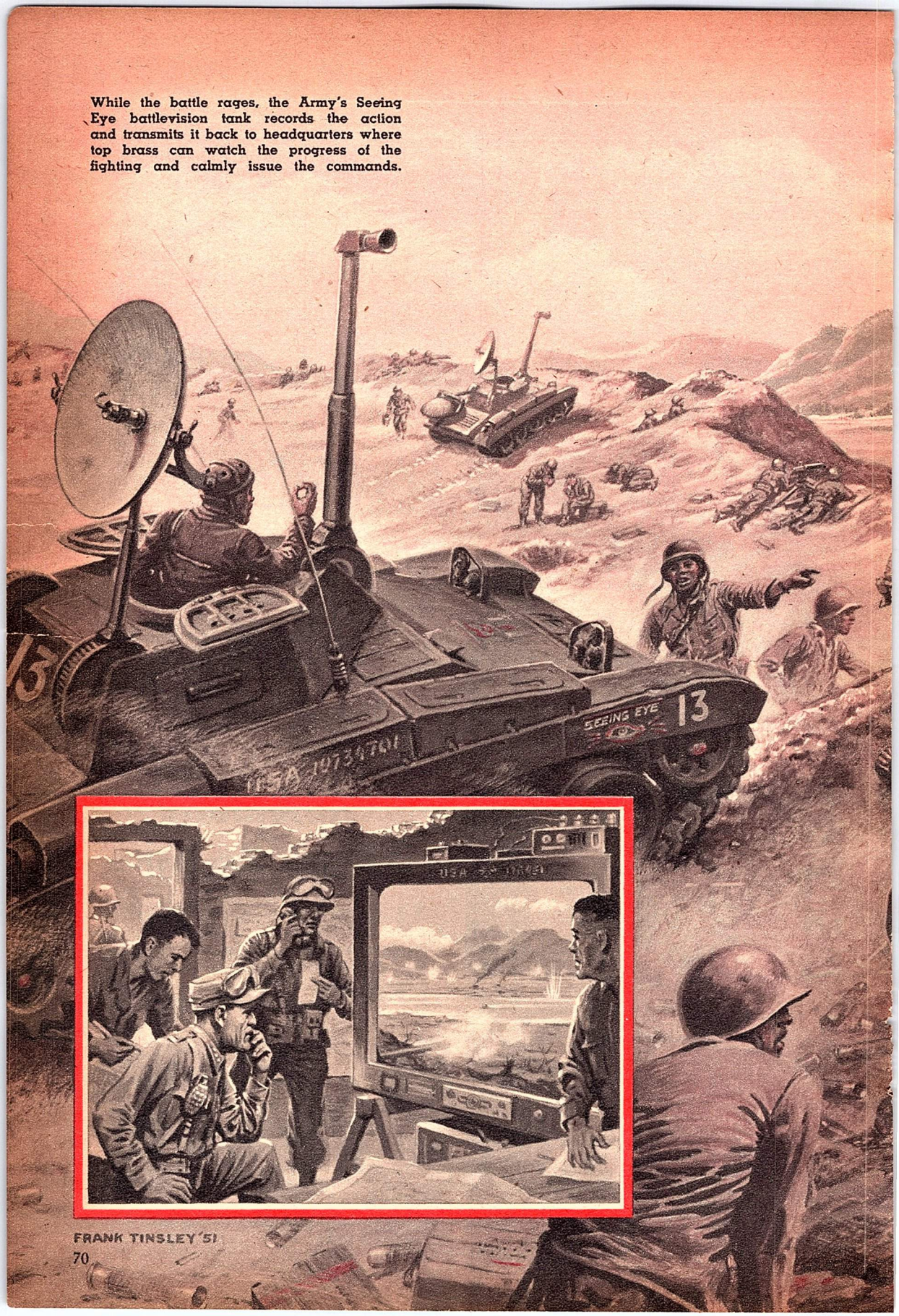


Automatic Page-Turner

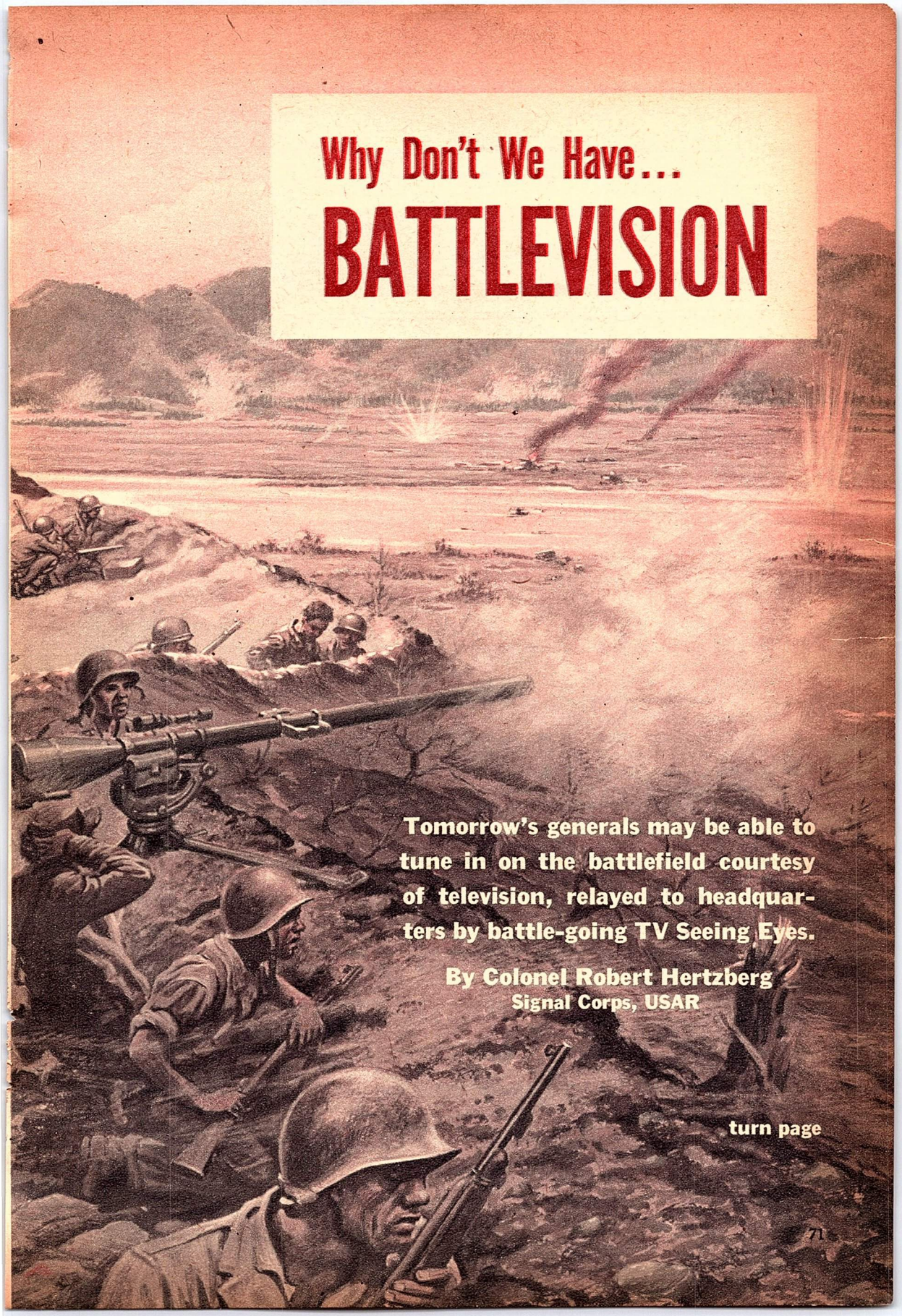
MOTION picture engineer Friend Baker made this unusual device for his polio stricken son. Pressure of tongue in cheek throws a micro-switch, left, which turns magazine pages with dampened rubber thumb. Pages are reflected by mirrors. •



While the battle rages, the Army's Seeing Eye battlevision tank records the action and transmits it back to headquarters where top brass can watch the progress of the fighting and calmly issue the commands.



FRANK TINSLEY '51

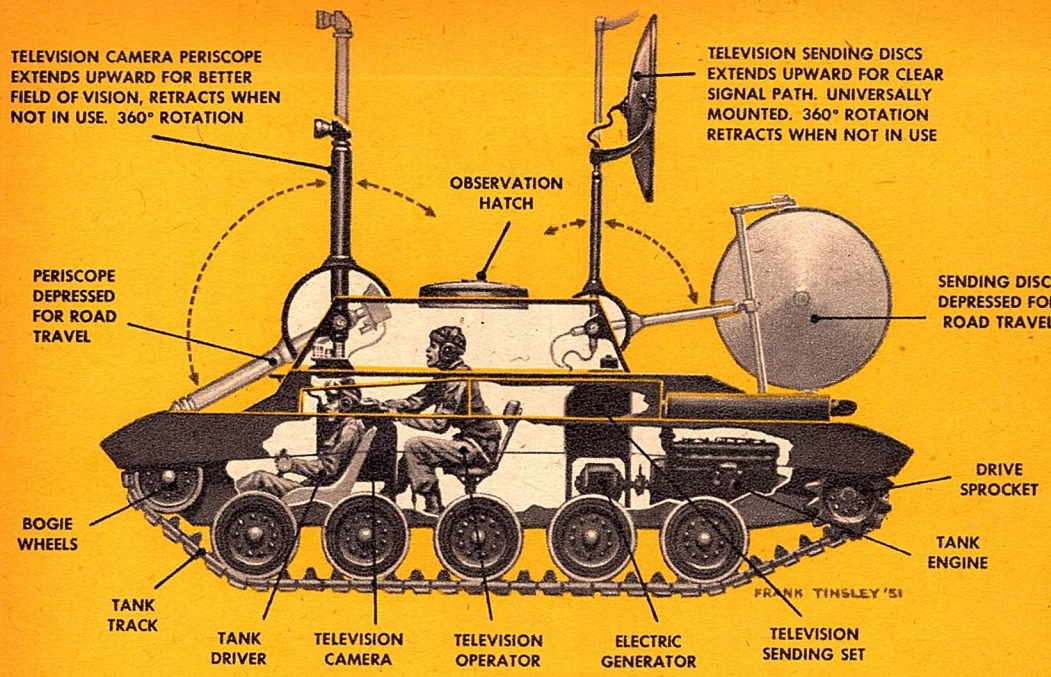


Why Don't We Have...
BATTLEVISION

Tomorrow's generals may be able to tune in on the battlefield courtesy of television, relayed to headquarters by battle-going TV Seeing Eyes.

By Colonel Robert Hertzberg
Signal Corps, USAR

turn page



THIS is no fantastic rambling of science-fiction!

If there is another war, it will provide definite opportunities for the use of modern television miracles.

TV set owners now enjoy better views of athletic contests than do most people right on the scene. Powerful telephoto lenses reach across playing fields and give spectacular close-ups of a runner dashing for the goal line or of a fielder snatching a high fly. Wide-angle lenses broaden the view and produce panoramic effects of great sweep.

"Why," military people ask, "can't we do exactly the same thing on battlefields that the commercial TV stations are doing on football fields? Our game is rougher and is played for keeps but that's just why the head coach—the commander of an army in combat—should be able to follow the moves of the members of his team. If he can see *what's* going on *while* it's going on, he won't have to wait for reports from his subordinate commanders. Why can't mobile TV vehicles be assigned to combat units just as conventional communication trucks are, so that the commander can instantly see the fighting in any particular area?"

In other words, why don't we have battlevision?

If this proposal had been made a few years ago it would have been dismissed as wacky. Today, however, battlevision already exists in technical form and needs only some good engineering to make it practical in tactical form. Only recently, RCA delivered to the Signal Corps an elaborate four-vehicle television caravan designed primarily to explore the possibilities of TV for army field instruction.

Each truck is a ten-ton, six-wheel job. Two are used for transmitting, two for receiving. One truck of each pair carries only electric generators, which are very large because they must supply power for studio-type floodlights as well as for the TV equipment itself. Since the latter alone uses comparatively little power and the battle cameras would operate only in daylight, the overall weight of tactical TV vehicles can readily be reduced by tons. Through tight miniaturization of components, it shouldn't be very difficult to produce a complete TV transmitter that takes only a little more juice than presently is required for a standard tank radio installation. The separate power generator van could then be discarded and the TV unit operated off the storage battery-charging generator combination of the vehicle's own engine.

When you remember that 20 and 30-ton



Transmitting units of the U. S. Army Signal Corps Mobile Television Unit are being used at present to send pictures from remote field activities to military classrooms. Could this actually be training for the real thing?

tanks are hardly more than medium in terms of combat weight, the idea of putting a complete battlevision station into a track-laying vehicle begins to make sense. It can resemble a conventional tank. But because it will hang on the edge of a battle rather than participate, it needs only thin armor and a couple of machineguns for protection against low-flying aircraft. It will do its shooting with a periscope-type camera which can be raised possibly to 30 or 40 feet to scan large areas in all directions.

The parabolic antennas which send out the TV signals are about four feet in diameter, made entirely of metal and easily arranged on folding, telescoping mounts on the back of the tank. At least two antennas would be provided so that any battlevision vehicle could act as a relay station between another TV tank further forward and the receiving stations in the rear. One "dish-pan" would pick up the signal; the other would send it along after amplification by the equipment inside the tank. This is precisely the same micro-wave relay method in everyday use for the transmission of TV programs from city to city for chain telecasting.

There is practically no limit to what can be done at the receiving point in the commanding general's headquarters, since weight and bulk are less important here than up front. Even as it now stands, the receiving half of the Signal Corps' experimental TV caravan is more than adequate to serve an Army HQ. It contains ten 16-inch receivers and a 3x4-foot projection unit. Staff officers watching the small receivers could monitor individual battlevision scenes. Through a simple switching panel, the general could throw any of the latter onto his own big screen. This arrangement merely duplicates the setup in the control room of any large television station.

And the TV camera itself is not limited to the ground. Airborne TV was used experimentally in pilotless planes during World War II and Westinghouse has experimented with Stratovision from a B-29 circling over Baltimore. Also, about three years ago, a New York station put on a terrific TV show from an airplane carrier off the Atlantic coast.

How far can this idea go? Well, in any future war, it is certainly not unreasonable to expect direct telecasts to be relayed via land, surface ship or airplane stations to the domestic TV chains for nation-wide transmission. •

A MONEY-MAKING

idea



Big Business From Odd Jobs

A youngster, fresh from school, found there was money in the odd jobs neighbors asked him to do. He bought equipment on time and now, at 18, earns $15,000 a year.

By H. W. Kellick

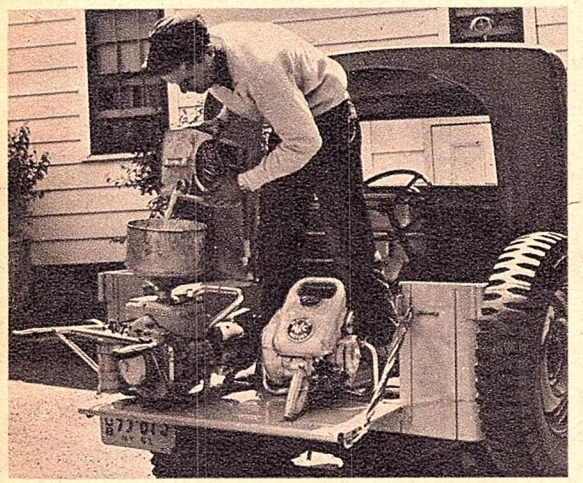
WANT some trees cut down and sawed into firewood? Need top soil for your garden? How about underbrush to be cleared, bulldozing or snow removal? If your answer is "yes" then the fellow to see is Gene Lamb.

This 18-year-old youngster from Ossining, N. Y. offers a complete tractor service which provides, in addition to the above, plowing, harrowing, stone hauling, rough and final grading, mowing and hay removal. In fact, he'll solve almost any problem confronting a homeowner.

For providing these services, young Gene Lamb earns $15,000 a year. He does no advertising, but word-to-mouth reports are swamping him with jobs. To save expenses, he uses his home as an office. His equipment, modern in every respect, is worth









Gene Lamb's office is a corner of the living room in his parents' Ossining, N. Y., home, top. Here he takes orders and plans their execution. A Willys Jeep furnishes him cheap transportation to and from jobs, carries his saws and other small tools.

The two-man power chain saw does the heavy work when the job is cutting down large trees and sawing them into logs or firewood, top. Mowing work is common during summer and fall. He also rakes hay, stacks it and hauls it away if desired.

$7,000 and most of it is housed in a garage beside his home.

It all started three years ago. Gene was 15 then. He got a job as a helper to a landscaper, working after school and during summer vacations. While on the job, people pestered him to do odd jobs around their gardens. Gene merely shrugged off these requests. He was busy with his work and he had a regular weekly check coming in. It wasn't much, but the pay was steady and big enough for a teen-ager.

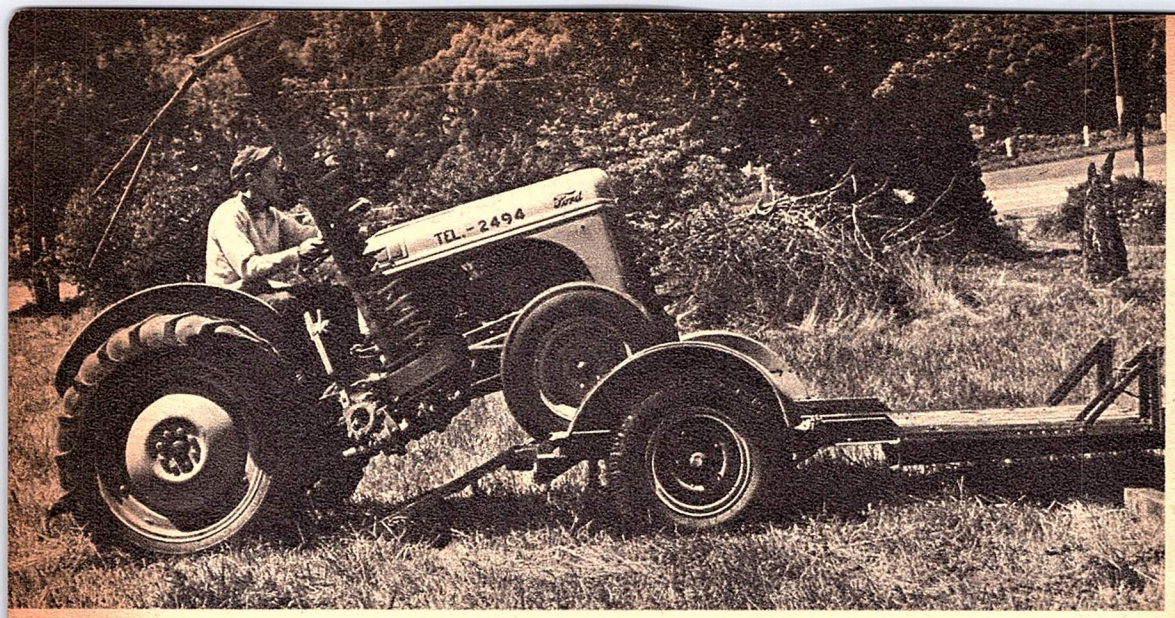
As people continued to ask Gene to do their odd jobs he began to reason, "If so many people want this work done, there must be money in it."

He saved up enough money for a down payment on a used Allis Chalmers tractor complete with mowing bar, disk harrow and harrow attachments. To get experience with this outfit, he practiced on his home lot.

One day a neighbor saw him at work. Could he mow a field of hay for her, rake it and stack it in heaps? "Sure," replied the energetic kid. "I'll do it after school."

He worked four hours on the job and got $20. Inspired by his first check earned in his own enterprise, Gene accepted some of the work neighbors had been trying to force on him.

While clearing underbrush and burning it, one customer asked Gene if he could cut down a couple of trees and saw them into required lengths. Gene never did this work before, but he could try the assignment anyway. He borrowed a chain saw from a friend and after some difficulty



Lamb loads his new Ford tractor on a trailer to move it to a distant job.

learning to master its power unit, Gene went out and did the job, earning $30. The three trees took him less than an hour.

Using this capital, Gene immediately added a McCulloch one-man chain saw to his equipment. He managed small tree-cutting jobs with this tool and found a lot of customers.

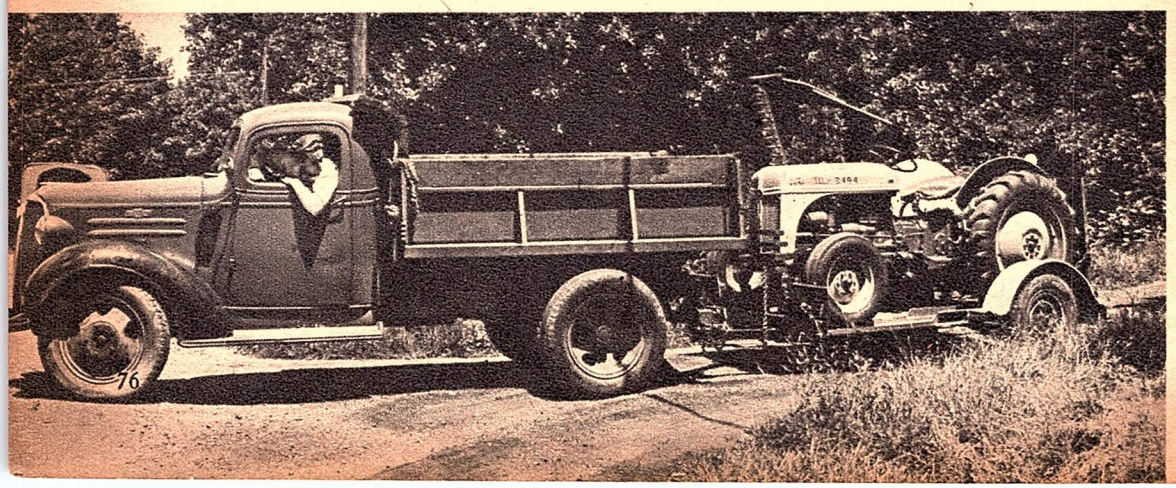
Then a new problem arose. A man wanted some trees felled and cut into cord wood. To do the job, Gene needed a circular saw. He called on his hardware dealer and made a deal. "If I like this saw," said Gene, "I'll buy it." "Agreed!" said the dealer.

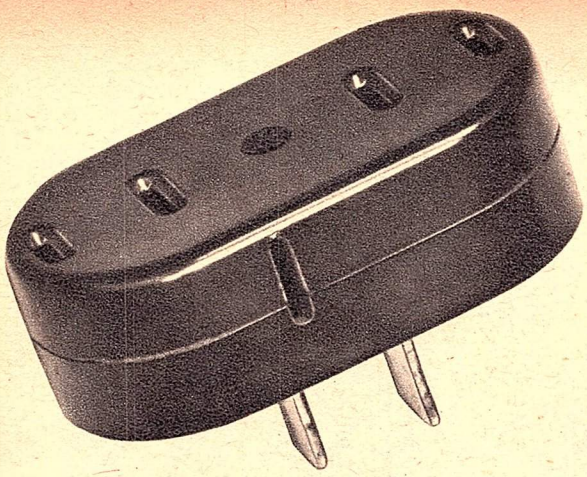
Gene cut six cords of wood with the borrowed saw attached to his tractor. Pleased with the way it worked, Gene kept his promise and bought it on time.

When a tornado whipped Westchester County, N. Y. into a frenzy in the fall of 1950, uprooting trees and leaving mountains of rubble in its wake, Gene Lamb literally cleaned up. Armed with two chain saws (one a two-man job) his tractor and its attachments and a borrowed dump truck, Gene ploughed through tangled telephone wires, fished trees out of swimming pools, swung on branches like a Tarzan to cut broken limbs, and sawed up trees, some of them three feet in diameter. He hauled away big logs with his tractor and trailer at $5 an hour. Then he cut the logs into cord wood on his own time and sold it for $30 a cord. On some projects he hired a couple of men and charged the standard rate of $10 an hour for rubble removal. If Gene had not been fully equipped to handle this emergency work, he never would have been able to take advantage of Nature's sudden blow.

Today, Gene has a complete assortment of tools and equipment. Recently he traded in his old tractor for a 1951 8N Ford. He added a front [*Continued on page* 178]

His ton-and-a-half truck does the towing. Attachments are carried inside.





THIS MONTH'S PRIZE

gadget

Fireguard Wall Plug

CLARENCE R. CURTIS celebrated his tenth anniversary as lieutenant of the Lombard, Ill., volunteer fire department in a manner befitting a fire official. He invented the Fireguard—a safety plug which eliminates fire hazards caused by faulty wiring and extension cords.

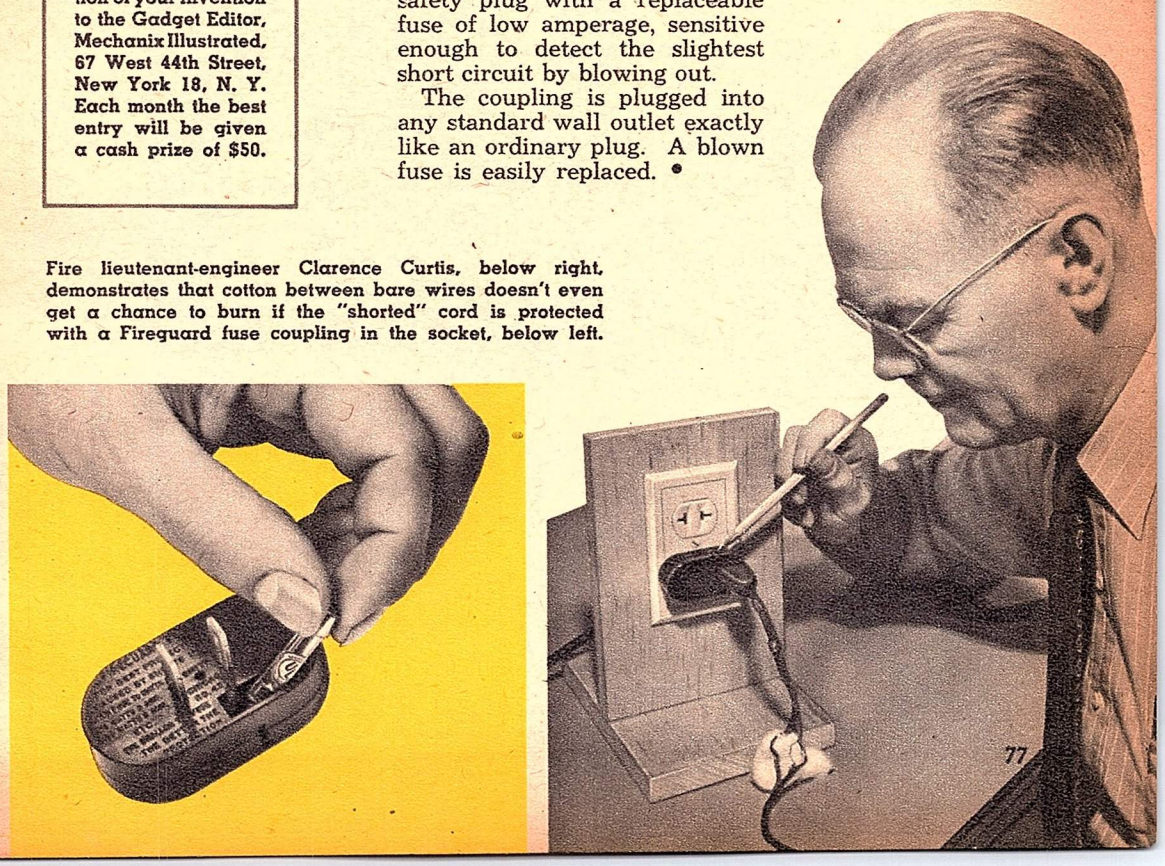
Curtis, who is research engineer for the F. H. Smith Manufacturing Company of Chicago, had become increasingly aware of the inherent fire dangers which exist in electrical cords. In his capacity as fire lieutenant, he saw thousands of fires caused by cords which had deteriorated.

Putting his electrical know-how to work, Curtis devised the ingeniously simple Fireguard fuse coupling—a double-outlet, safety plug with a replaceable fuse of low amperage, sensitive enough to detect the slightest short circuit by blowing out.

The coupling is plugged into any standard wall outlet exactly like an ordinary plug. A blown fuse is easily replaced. •

WIN $50

Dreamed up a neat gadget? If you're pretty keen about that pet project of yours, get busy and work it out in your shop. Then send pictures and a description of your invention to the Gadget Editor, Mechanix Illustrated, 67 West 44th Street, New York 18, N. Y. Each month the best entry will be given a cash prize of $50.



Fire lieutenant-engineer Clarence Curtis, below right, demonstrates that cotton between bare wires doesn't even get a chance to burn if the "shorted" cord is protected with a Fireguard fuse coupling in the socket, below left.

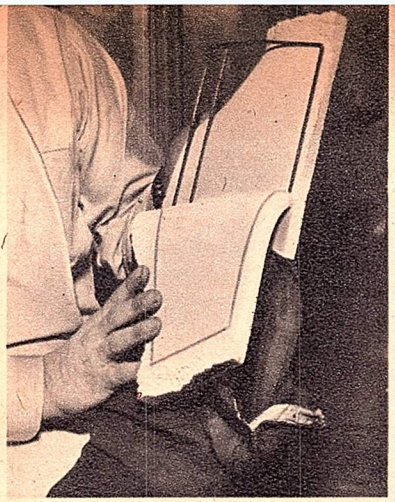
MECHANIX ILLUSTRATED

PIN-UP CAR



1903 Ford

Owner: Charles Broder, Tucson, Ariz. Original cost: $800. Engine: Ford 680c, two cylinder opposed, 10 hp, chain drive. Engine is located under the seat. Top speed: 30 mph. This car still has all its original body parts.





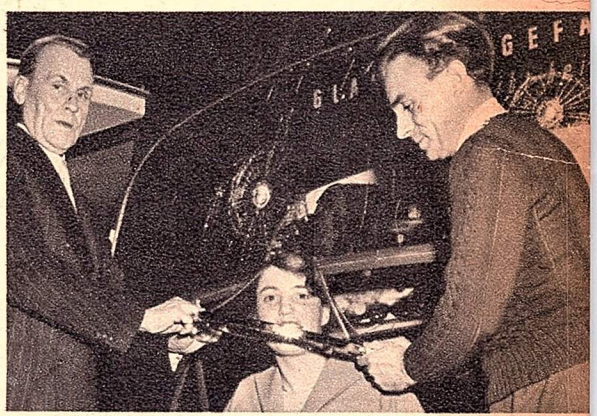
NEW for the ROAD

Crash Bumper helps protect the passenger sitting next to the driver in an accident. Two sponge rubber pads 21 in. by 8 in. with a central wire frame can be molded to the car's dashboard as in photos above. Soft Spot Dash Pad Co., Detroit.

Splinterproof Glass was recently exhibited at the International Auto Show in Frankfurt, Germany. It is three-ply having a middle layer of a transparent, elastic material which is stretched over a girl's head in recent demonstration, photo below.

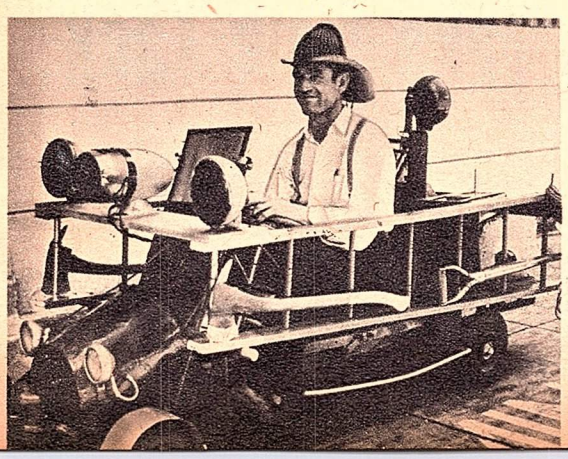
WIN $25

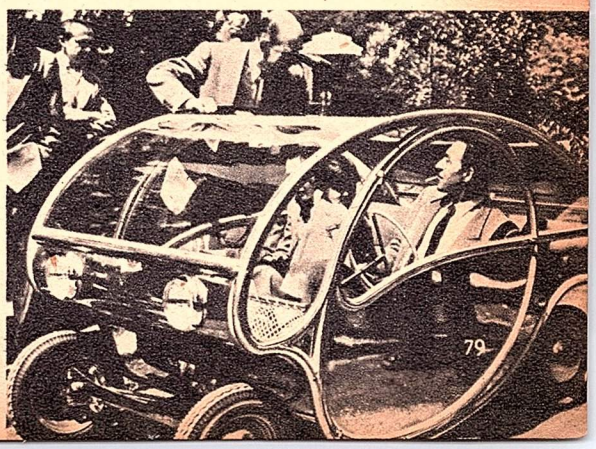
Send in a sharp, glossy photo of a snazzy car, old-timer or new, posed as at left with owner or a pretty gal. Include self-addressed, stamped envelope (just in case) and all vital statistics about car and owner. Mail to Pin-Up Editor, MECHANIX ILLUSTRATED, 67 West 44 Street, New York 18, N. Y.



Baby Fire Truck might be just the thing for baby fires. It is powered by a small gasoline engine and is equipped with a siren that can wail almost as loudly as its big brothers. Truck's sides are ladders. Driver is Milton Bunker of Escabana, Mich.

See-All Body is the unusual feature of a midget car designed by artist Paul Arzens of Paris, France. Hood is Plexiglas and entire car weighs only 225 lbs. Lower portion of body has a mirror effect. Cloth cover rolls forward over top when sun is too hot.

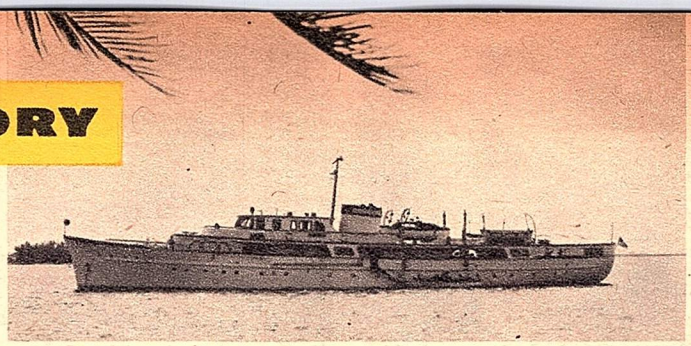




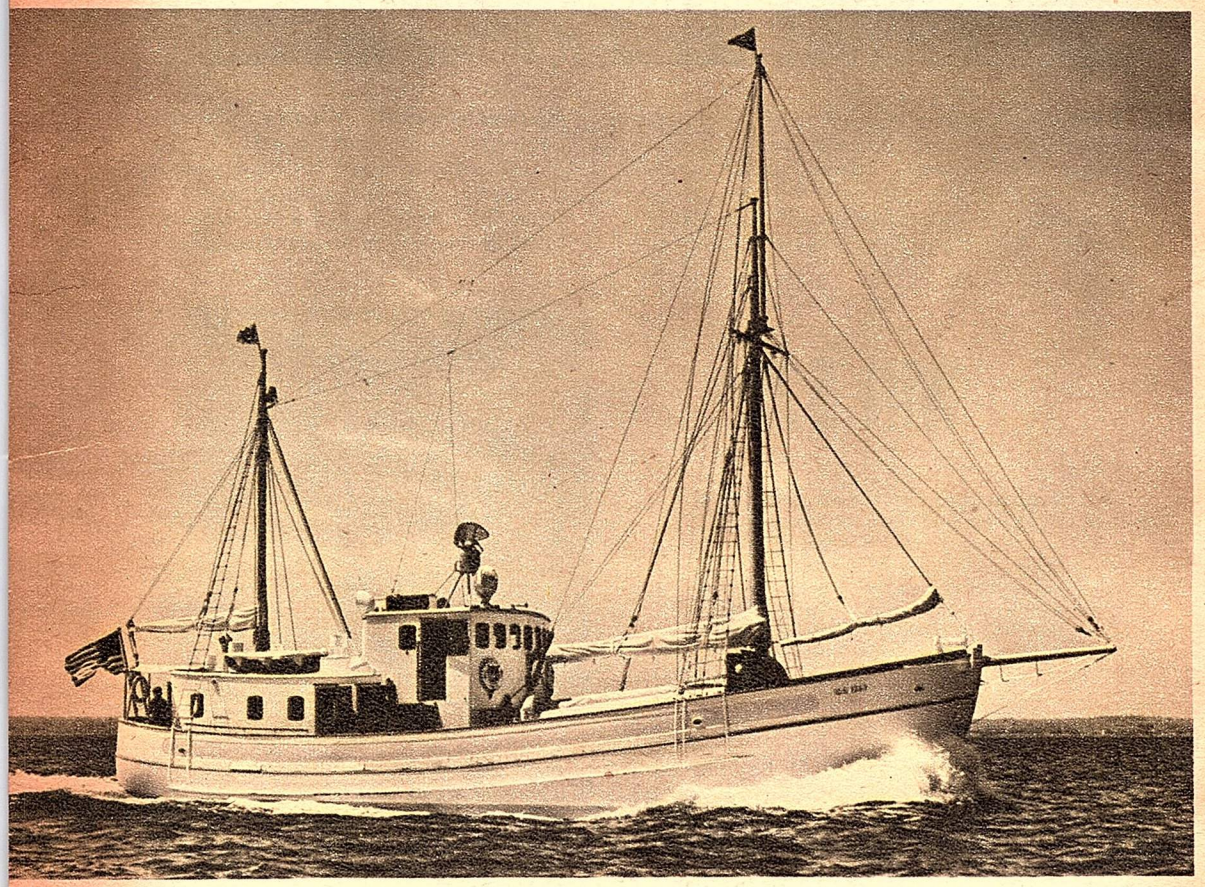
COVER STORY

Photos by Rosenfeld

The DANGINN (on cover), largest yacht built since World War II. Builder: Welding Shipyard of Norfolk, Va. Length: 190 feet. Flies Liberian flag.

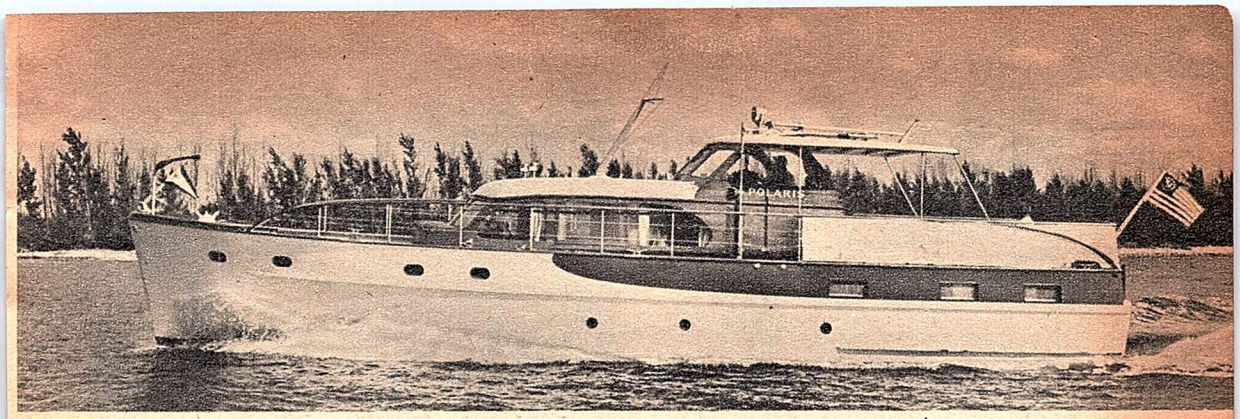


GERDA, 75 feet, built in Denmark, resembles fishing smack. Two 126-hp diesels; 10 knots; 3,000-mile range.



Postwar Yachts Take New Tack

THE day of the super luxury cruiser for private use has passed—temporarily, at least. No more million-dollar floating mansions are riding the ocean waves, to be listed conveniently on an income tax report as "business expense." Since the war, seagoers are thinking twice before spending huge sums of money on yachts. New models shown here reveal an emphasis on economy both in crews and upkeep. Speed has been reduced to conserve fuel and overall design stresses utility along with pleasure. Top prices run around $100,000 but the average is about half this. •



POLARIS. 53 feet, built by Burger of Wisconsin. Two 200-hp GM diesels. Owner: Lawrence Plym.



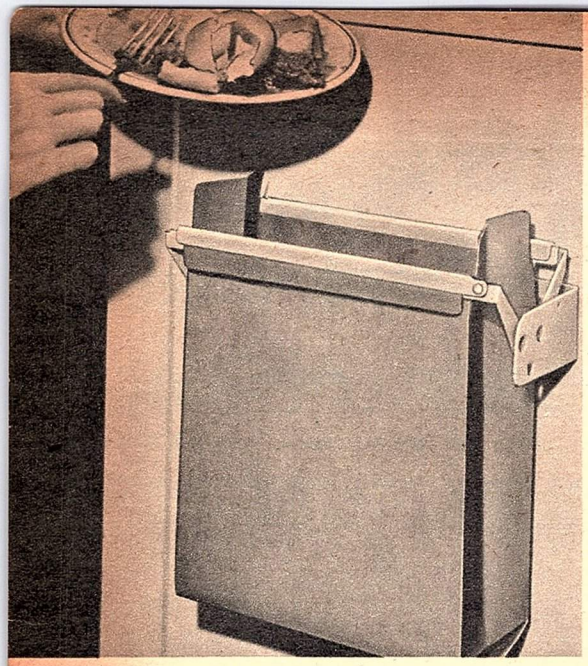
SEER auxiliary ketch, 66½ feet, built by Nevins of City Island. Two 200-hp diesels. Owner: H. B. Hess.



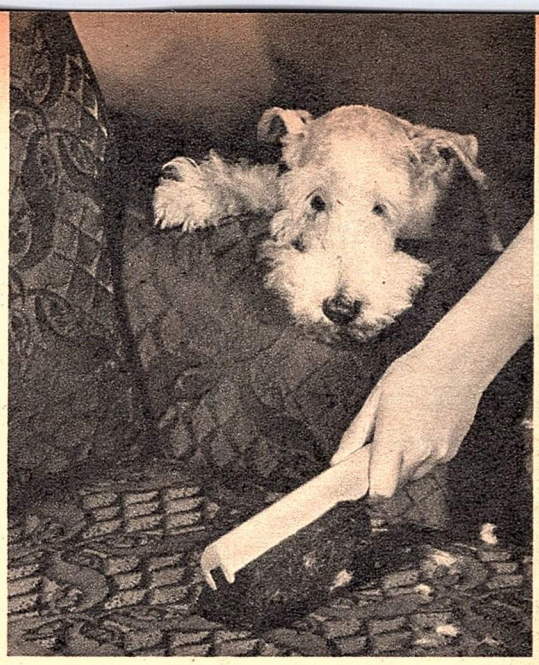
DRAGON LADY steel ketch, 77 feet, built by Burger. One diesel; 2,500 sq. ft. sail. Owner: Wm. Parker.



PARANDA for fishing, 60 feet, built by Jakobson, N. Y. Two GM diesels; 12 knots. Owner: D. Braman.



Scrap-Trap eliminates sink strainers and garbage pails in the home, provides clean and easy garbage disposal. Frame holds disposable bag, opens easily, snaps shut. Central States Bag Co., St. Louis, Mo.



Happy Puppy will escape punishment for leaving hairs on furniture if his owner has this wool fiber brush. Fibers are held by Du Pont neoprene. Cleans all lint-attracting fabrics. Drexel, Litchfield, Conn.

NEW for the HOME

Kiddie Keeper is a portable crib and sponge bath for use anywhere baby goes. It has hold-down straps, air-bolstered sides and deflates into small package for traveling. Kaydon Mfg., Santa Monica, Calif.

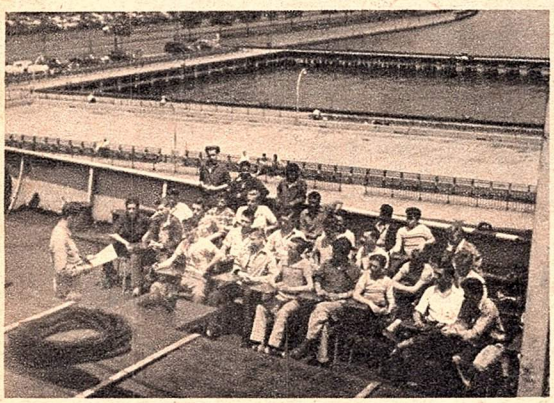
All-In-One Kitchen combines a refrigerator with a three-burner range, sink, drainboard and storage compartment. Unit is 27½ in. high, 36 in. wide. Made by General Air Conditioning, Los Angeles.



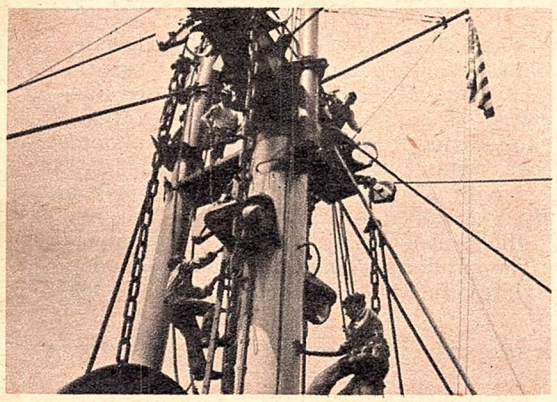


Scholar-Ship

AT Pier 73 on New York City's East River, the little red schoolhouse has been replaced by a big black school ship. The S.S. John W. Brown is the only school in the country where boys can learn seamanship in the authentic atmosphere of a seaworthy vessel. Even "Yes, teacher," has been replaced by "Aye Aye, sir." •

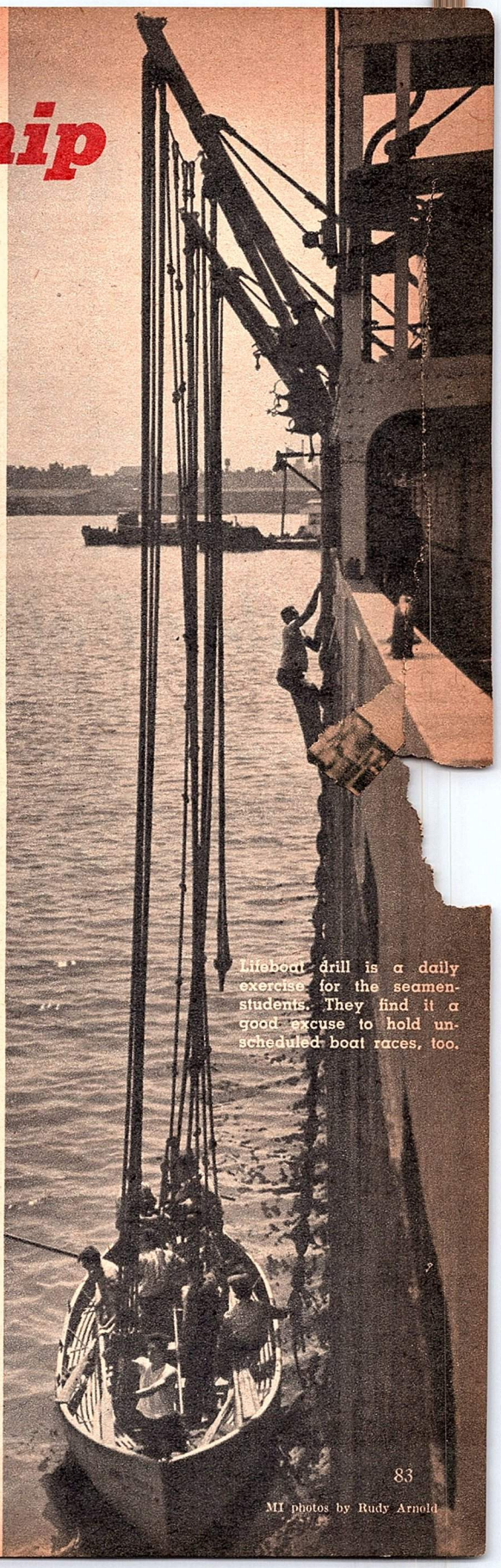


Open-air classes are conducted on the deck of S.S. John W. Brown, above. Students, below, must do menial jobs like washing down the mast, too.



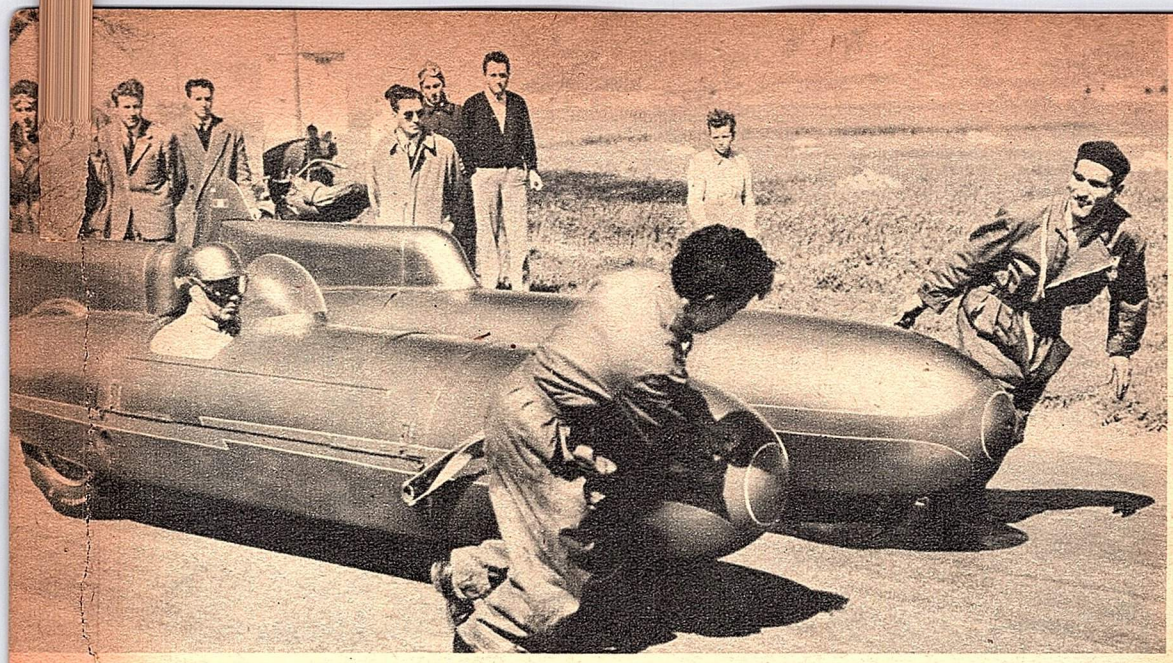
Floating schoolhouse, below, is a 10,000-ton merchant marine Liberty ship. Maritime Trades Division of Metropolitan Vocational H.S. uses it.





Lifeboat drill is a daily exercise for the seamen-students. They find it a good excuse to hold unscheduled boat races, too.

MI photos by Rudy Arnold



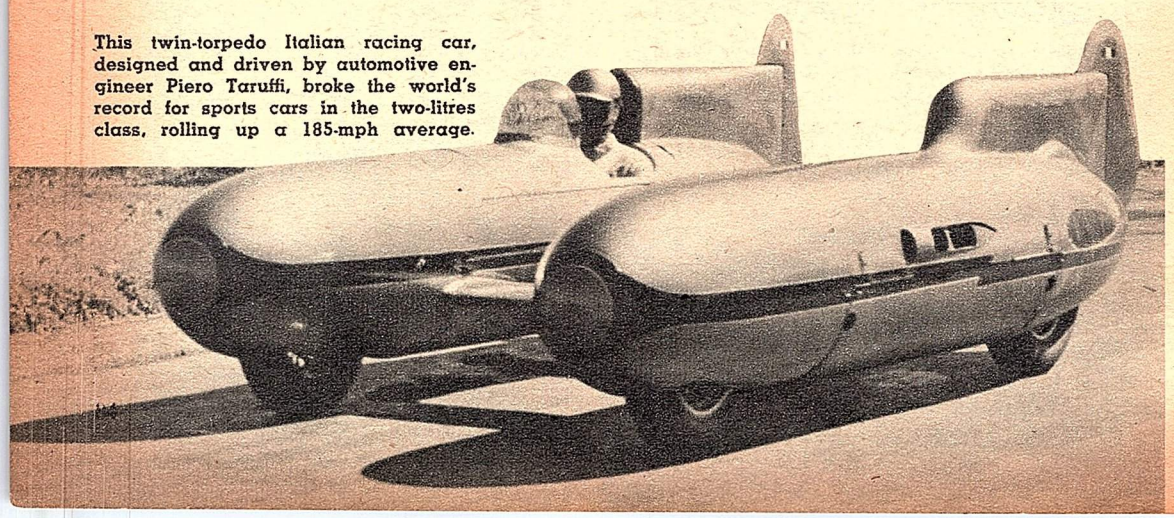
Double Bullet on Wheels

By Michael Stern
MI's European Correspondent

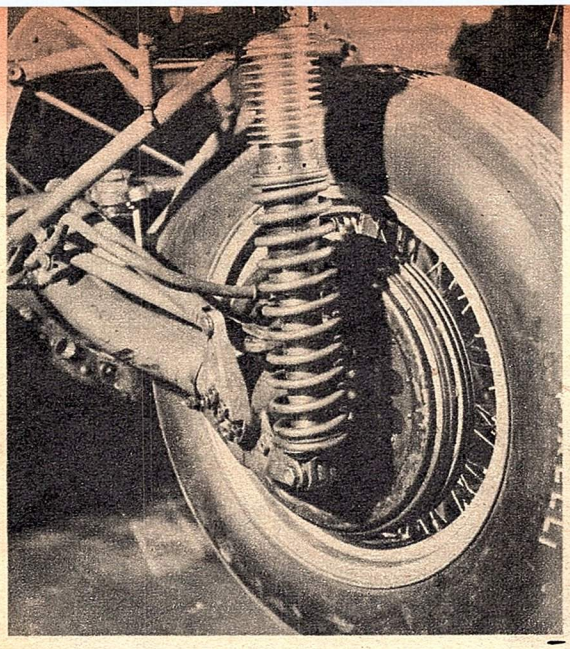
AN amazing contraption, I thought, as the odd-looking car was unloaded from a truck onto the Appian Way, just south of Rome. The kind of vehicle that springs full-grown out of fantastic comic books. But, it was an automobile, all right—a pair of sleek silver-and-blue torpedoes, shaped very much like the deadly fish launched by submarines, connected by two thin strips of beveled aluminum.

I was one of the handful of racing enthusiasts and official timers who had traveled to this dangerous stretch of two-lane macadam road flanked by deep ditches out of which grew huge trees. Most of us had faith in the radical machine because it had been built—and was being driven—by Piero Taruffi, a brilliant automotive engineer and one of the world's best racers.

The wheels were separately suspended and absolutely independent. This suspension, instead of being parallelogramed sidewise, as is the case with American cars, functioned from front to back. The motor was a standard Maserati four cylinder, 1720 cc with four forward speeds. Power from this motor was transmitted to the rear wheels by a chain drive, as in a motorcycle. The tail fins sticking up from the torpedoes were adjustable [*Continued on page* 163]



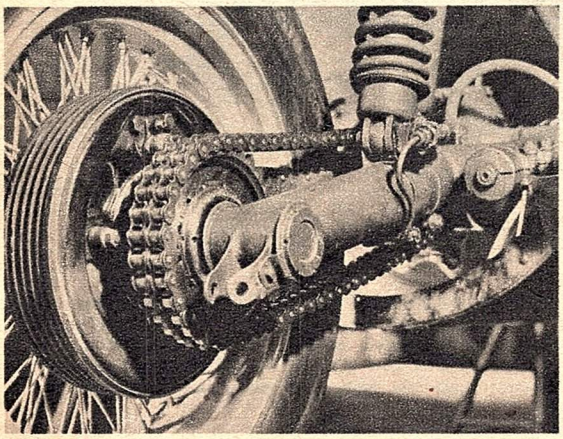
This twin-torpedo Italian racing car, designed and driven by automotive engineer Piero Taruffi, broke the world's record for sports cars in the two-litres class, rolling up a 185-mph average.



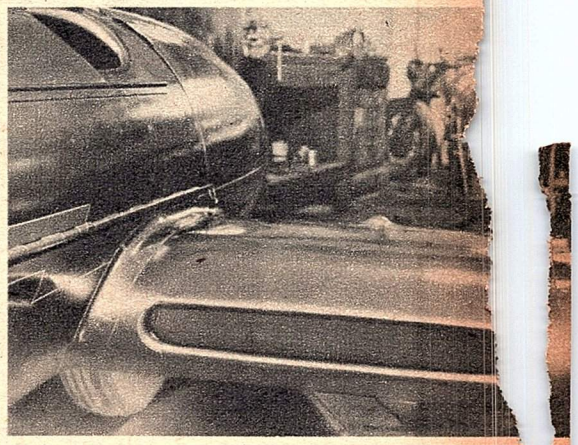
Wheels are absolutely independent—this left front wheel is suspended from a steel elbow. Note the coil spring and hydraulic shock absorbers.



Designer-driver Taruffi checks the Maserati engine located in the left torpedo of the automobile. The 280-hp engine has four speeds forward

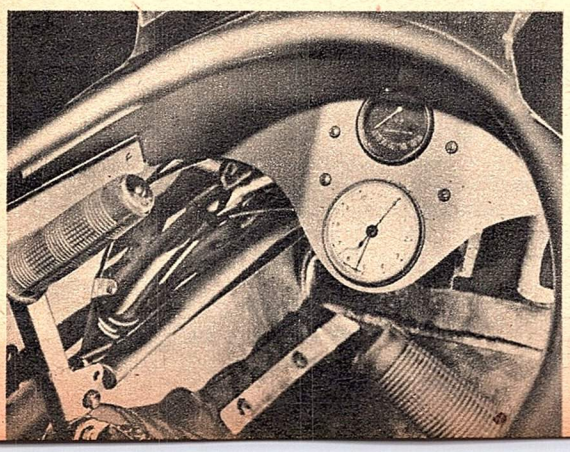


Power from the Maserati four-cylinder engine is transmitted to the rear wheels by motorcycle-type chain drives as on this left rear wheel of the car.

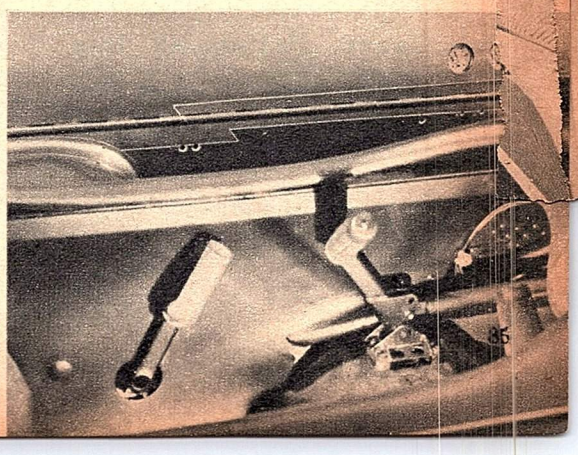


Rear housing which connects the twin torpedoes also contains the radiator of this radical Italian machine. The torpedoes have adjustable tail fins.

Driver's compartment in right torpedo has deep scoop seat. Water temperature and tach dials are on dash. Note steering arms at left and right.



Two tiny gauges at upper right are oil and gas indicators while lever at left is for shifting gears. Driver must keep legs straight forward.



MI Tests the '52 Packard 300



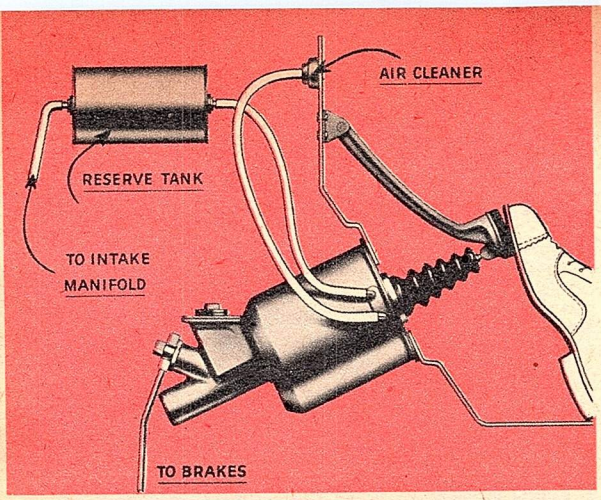
Midway in price between the 200 and 400 models, the Packard 300 when equipped with Ultramatic drive is powered with a 155-hp Thunderbolt engine which can whip it over the highways at better than 100 mph, fast going in any league.

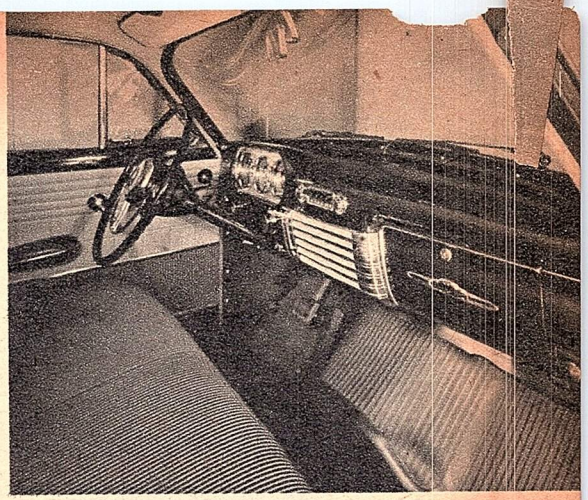
Power brakes, luxury and speed distinguish this year's bearers of a fine old name in American cars.

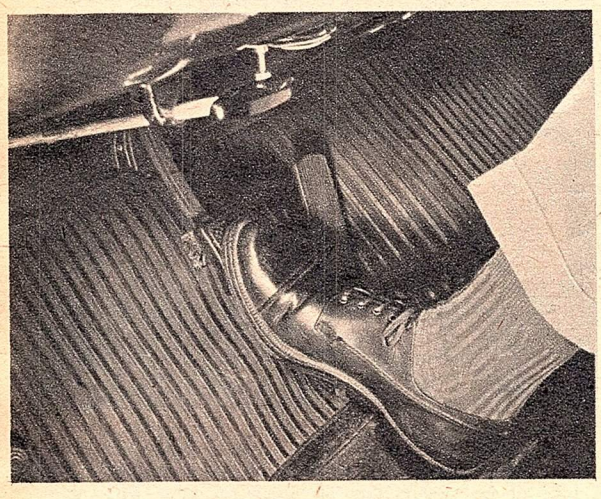
By Tom McCahill

A lot more has been added to the 1952 Packards than meets the eye. At a quick glance the line looks pretty much as it did in 1951. But when you start to analyze it, bolt by bolt, a whole laboratory full of changes jumps out at you—and thereby hangs a tale.

Like all other car manufacturers, Packard is harried by the JS-factor, standing for Joe Stalin, and by its corollary, WTAGTDN, meaning What's The Administration Going To Do Next? Nobody in Detroit seems to know from today to tomorrow what to expect in the way of regulations from Washington. The latest order is that all automobile models will be frozen, as of February 1, 1952, for several years.







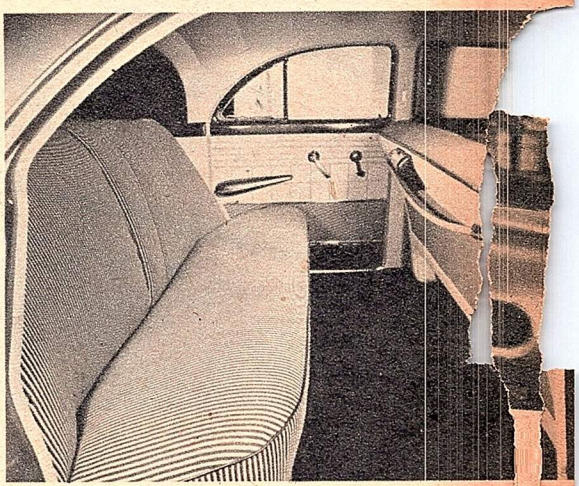


Diagram at top shows how Packard's new Easamatic power brakes work off engine vacuum. They reduce pedal pressure by 40 per cent and "reaction lag" by 29 per cent, Packard engineers claim. Bottom shot shows smaller size of the new brake pedal.

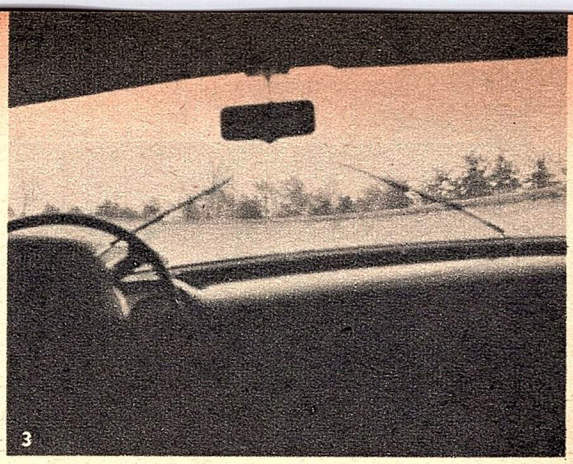
Emphasis on greater luxury has been made through the entire Packard line this year, as top and bottom photos show. Insulation and sound-proofing material has been doubled. Even door and trunk locks were redesigned to make them rattle-proof.

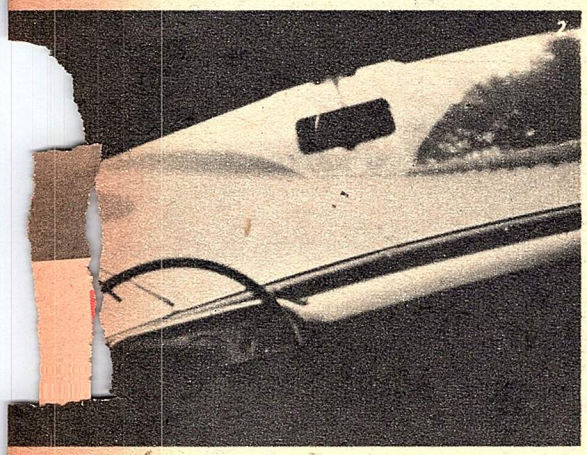
Even before this new ruling was announced, the uncertainty about future restrictions on auto production, and the scarcity of strategic defense materials which is going to get worse before it gets better, had already had their effect on new cars. Copper is at the acute stage, for instance. This means redesigned cooling systems because automobile radiator cores require a lot of copper tubings and fins.

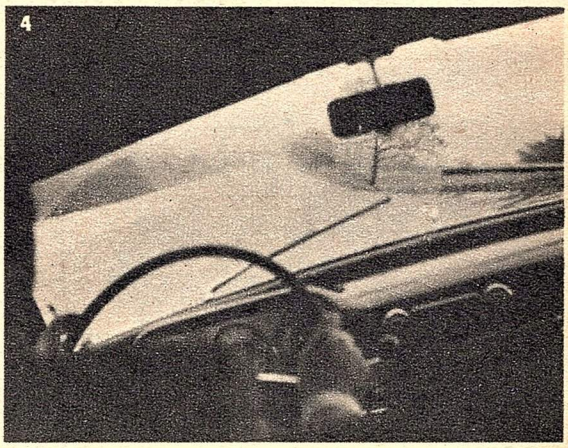
Recently I inspected five brand new 1952 models of various makes and found that all of them, including Packard, have cut down the size of their cooling cores, then increased the fan size and pitch to compensate. This move may very well become universal in the industry and if so it poses a new problem. Few people realize just how much horsepower it takes to turn a fan at cruising speeds. On one popular-priced car which I saw tested right after the war, the standard fan took approximately ten horsepower away from the rear wheels at 60 miles an hour. (With fans getting bigger the horsepower robbery will naturally increase, so this should be the time to bring back fan governors to cut this robber out at speeds above 45 to 50, which is where a fan stops being useful and just gets in the way. At the lower speeds where a fan is needed it would cut back in again.)

Packard is also introducing in the 1952 models some molded nylon gears to take the place of former brass and copper units. As the material pinch from Washington gets









Barreling through a driving rainstorm at the famed Packard proving ground track, Uncle Tom gave the fleet 300 sedan a real workout, as shown in this series of photos taken en route.

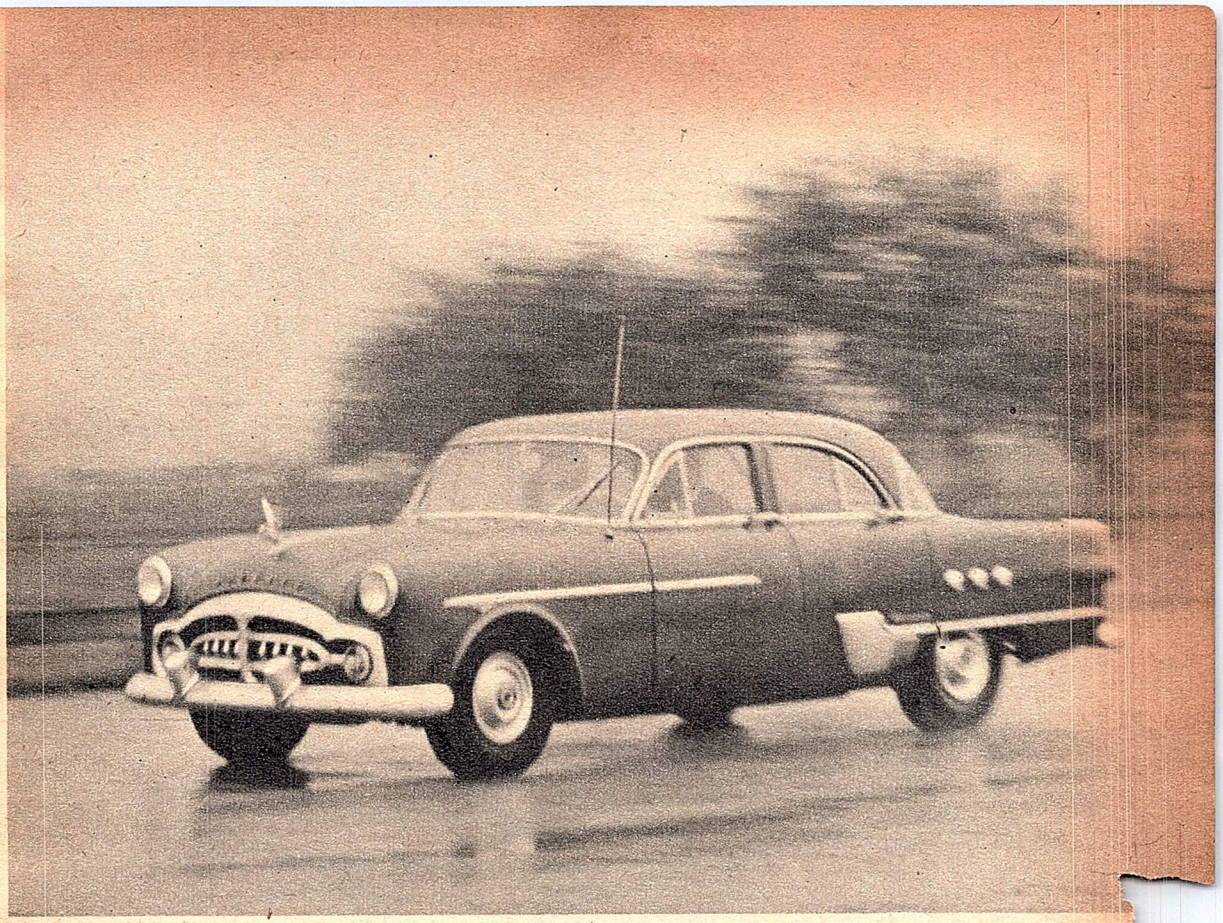
Following the sequence, 1 through 4, gives you some idea of how it feels to head into a banked turn at far better than 90 miles an hour with an expert test-driver like McCahill at the wheel.

tougher, more and more substitutions and changes are inevitable. Fortunately for us, America produces the world's greatest bale wire, or seat-of-the-pants, engineers and these boys should be able to keep us going for some time with improvisations that in some instances may prove even better than the original.

While Cadillac, with its new 190-horsepower engine hop-up, and Chrysler have elected to fight it out on the horsepower and performance line for '52, Packard has selected the luxury and silent ride tack. Not that the new Packards are backwards in performance, as the tests will show, but their main pitch this year is more de luxe, less noise and a set of brand-new vacuum power brakes that make stopping at high speeds as easy as cracking a peanut with a paratrooper's boot.

Vacuum booster brakes, new to American passenger cars, are old hat on other shores. In 1929 I owned a Belgian Minerva convertible sedan that had vacuum booster brakes. This big job from across the sea weighed 6,000 pounds and you could stop it on a nickel at high speeds. This big tomato had 23-inch spider wire wheels and one day I was cruising along in New York City at about 25 mph when a little girl darted right out in front of me from behind a parked car. With no time to swerve, I actually stood on the brakes and the car stopped in its own length—just about two inches from the child. As the Minerva and my pulse came to a halt, simultaneously, I heard a strange tinkle of breaking metal and then the whole car slowly settled to the pavement. Every spoke in all four wheels had snapped from the sudden application of those vacuum brakes!

That incident of 23 years ago left a warm



On his two-way runs through the rain, McCahill averaged slightly higher than 99 mph. On a hard, dry surface he believes the powerful new Packard can probably average between 101-102 mph.

spot in my heart for power brakes in spite of the bill for new wheels. They saved a child's life when no other conventional brake could have halted that monster so fast. Besides, when the wheels stayed on, driving was much easier. At times when the engine stalled and the vacuum went out I was forced to realize how much work those brakes did. (All booster brakes today are rigged so that if the vacuum should fail you still have mechanical or hydraulic braking at your disposal.) The 1952 Packard's vacuum brakes, called Easamatic, are one type of "matic" stuff I'll buy. They're a tremendous improvement, long overdue on all American luxury cars.

Bill Graves, engineering chief, and Edward Macauley, stylist boss, took a stand that I liked when I asked about transmissions. They told me that even though nearly 80 per cent of [*Continued on page* 172]

SPECIFICATIONS

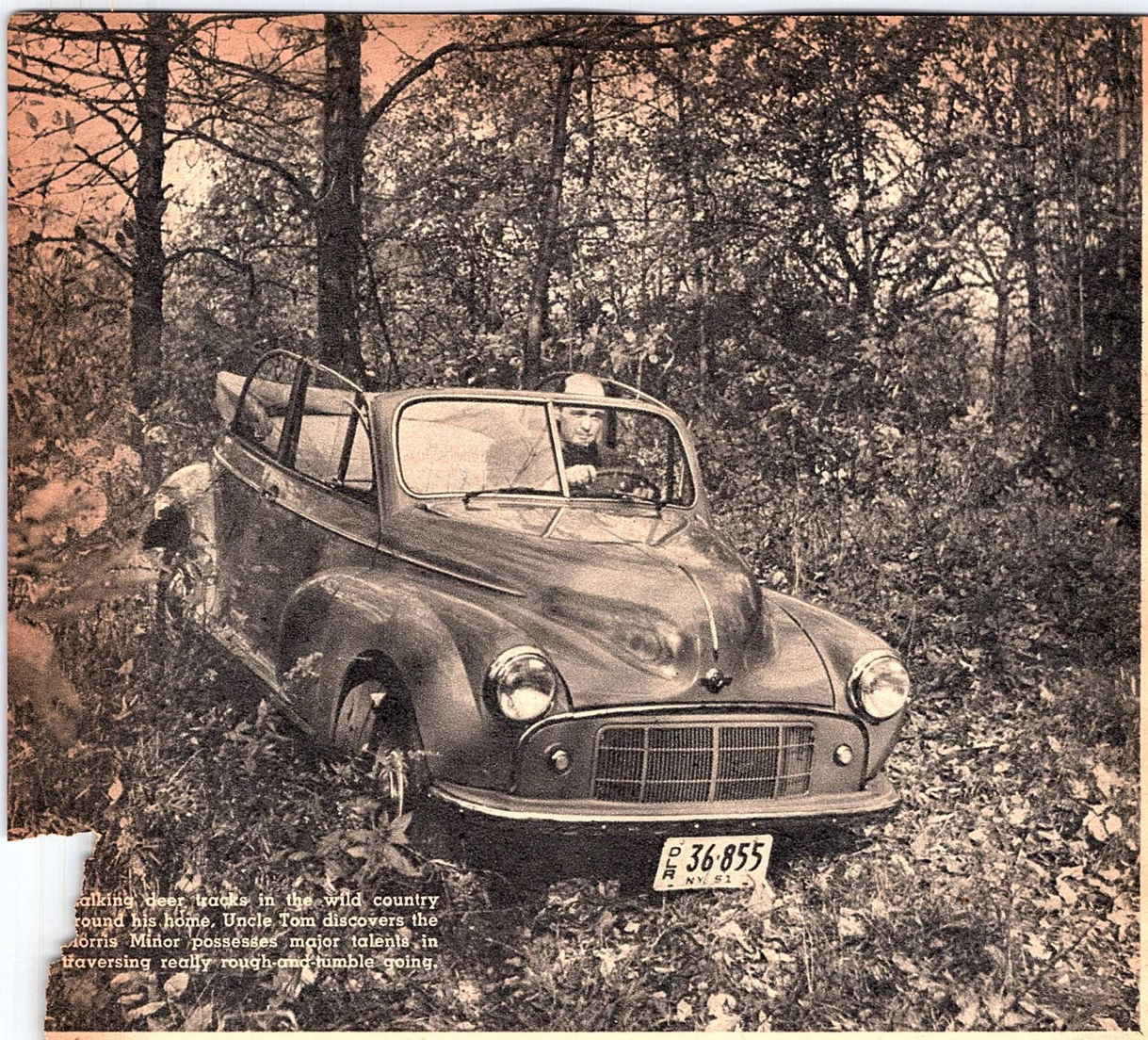
MODEL TESTED:
1952 Packard 300 four-door sedan (with Ultramatic transmission)

ENGINE:
8 cylinder, L-head; bore 3½ inches, stroke 4¼ inches; piston displacement 327 cubic inches; maximum torque 270 foot pounds @ 2000 rpm; brake horsepower 155 @ 3600 rpm; compression ratio 7.8 to 1

DIMENSIONS:
Wheelbase 127 inches; overall length 217 inches; tread 60 inches front, 61-7/32 rear; width 77-11/16 inches; height 62-29/32 inches; weight 3,875 pounds; standard tire size 8.00x15; gas tank 20 gals

PERFORMANCE:
(using Low and shifting to Drive)
0 to 30 mph, 4.3 seconds
0 to 50 mph, 9.8 seconds
0 to 60 mph, 13.8 seconds
0 to 70 mph, 18.3 seconds
0 to 80 mph, 24.5 seconds
Half-mile from standing start, 32 seconds
Top speed, 101-102 mph, estimated

SPEEDOMETER ERROR:
At 60 mph on speedometer, actual speed 56.60 mph
At 90 mph on speedometer, actual speed 84.90 mph



alking deer tracks in the wild country round his home, Uncle Tom discovers the Morris Minor possesses major talents in traversing really rough-and-tumble going.

McCahill Drives the Morris Minor

Product of the same company that makes the famous British M. G., this small, low-priced car has some remarkable characteristics, our remarkable auto expert finds.

By Tom McCahill

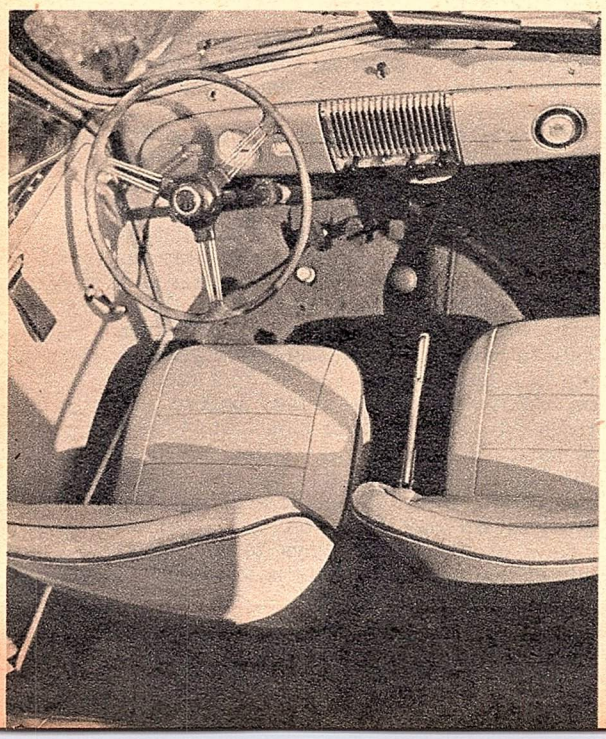
THE Morris Minor 2-door convertible is one of the best automotive buys ever to come from the land of Yorkshire pudding. This little English roller skate, with a price tag of just about $1,400 (same price for the sedan), rides like a big Detroit cushion, gets 40 miles out of a gallon of gas and corners and handles like a $5,000 sports car.

The Minor is a big car on the inside and a half pint on the outside. It has loads of room for two six-footers in the front and ample space for two more on the back seat. Though it is not rated as a cop-baiting sports car, it has done remarkably well in class events because of its outstanding handling qualities. The slightly-less-than one-litre engine, with a four-speed transmission, gets this boy's-size barge over the road nicely, even if it doesn't send your pulse beat into the stratosphere. After all, 56 cubic inches of displacement, 27 horsepower and 39 pounds of torque pushing 1,700 pounds are not apt to shatter any Penn Turnpike or Pike's Peak records. In spite of this it can cruise for hours at close to 60 and its quick maneuverability and its agility in heavy traffic will have the Chrysler V-8's and Caddies gasping for breath, trying to keep up.

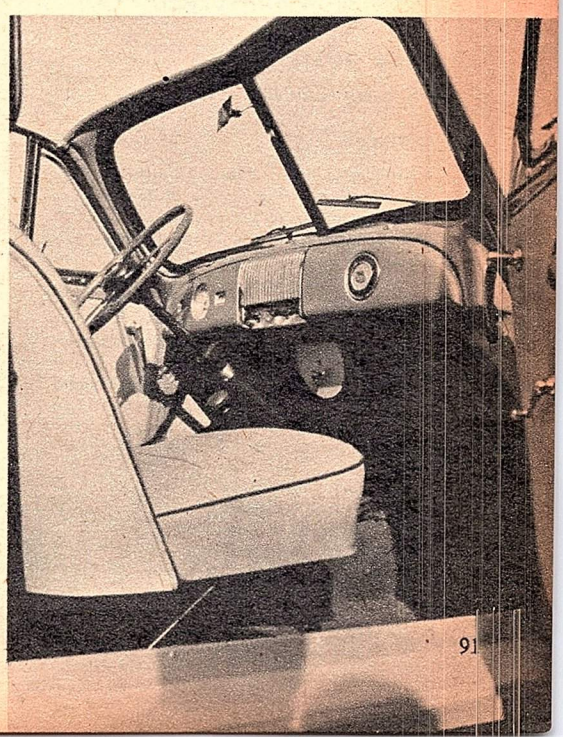
Cliff Baker of England, the company representative for America, brought the Minor convertible, or tourer as it is known in Albion, to my home for a tryout. I have a hill there which is one half-mile long and averages better than a 20 per cent grade. It will break the back of the usual pip squeak when loaded so this is where I made my first test. Baker, who goes 200 pounds, and I with close to 250 were in the front seat while Joe and my wife were in the back. With this better-than-600-pound load I made several runs and at no time found the slightest trace of balk. At one spot where the grade is almost 25 per cent, I stopped the car dead and then started off again without any distress, quite a feat for an alarm clock-size engine.

Next, I headed for a private mountain trail that is heavily overgrown. It leads over slick grass, wet leaves and loose rock and is one of the best deer hunting trails in the East. In over half a mile of rugged going, uphill all the way, the Minor only spun its wheels once or twice and kept crashing through the heavy undergrowth like a miniature tank until we had reached the top. Before you blow your stack and ask what old Cue Ball McCahill was trying to prove, let me explain that I live in mountainous country where good traction, especially in winter, is a big must. Last winter I was completely iced in for two days, until I could arrange to have enough cinders

Simplicity in details like these is one reason why British can sell Morris convertibles in U. S. for only $1,400 despite the high tariff and shipping costs.



"It has loads of room for two six-footers in the front," says McCahill, who tested the little car with some 600 pounds of people and dog aboard.





Although it only displaces 1,700 pounds and measures a relatively tiny 86 inches between hubcaps, the Morris Minor's trim lines give the impression of a larger car. Unlike American models, convertible and sedan cost same.

SPECIFICATIONS

MODEL TESTED:

1951 Morris Minor convertible

ENGINE:

4 cylinder, L-head; bore 2.24 inches, stroke 3.54 inches; maximum torque 39 foot pounds @ 2400 rpm; brake horsepower 27.5 @ 4400 rpm; compression ratio 6.6 to 1. Piston displacement 56 cubic inches

DIMENSIONS:

Wheelbase 86 inches; overall length 148 inches; tread 50 inches front, 50 rear; width 61 inches; height 60 inches; weight 1,700 pounds; standard tire size 5.00x14; gas tank 6¼ gals

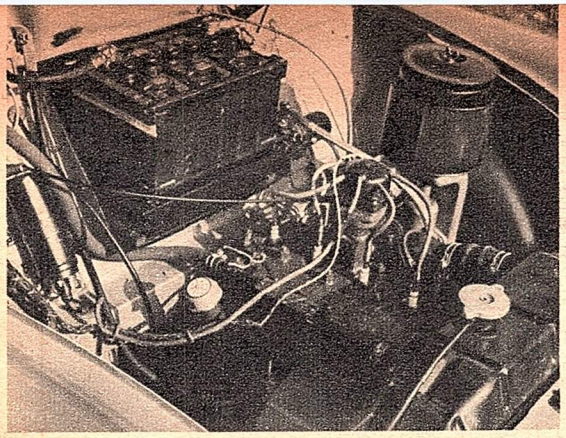
PERFORMANCE:

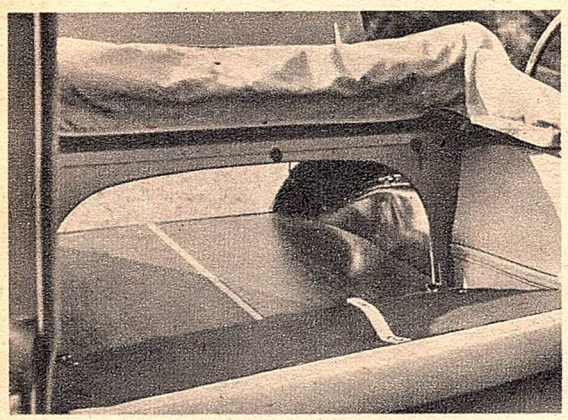
0 to 30 mph, 8.7 seconds
0 to 50 mph, 21.4 seconds
0 to 60 mph, 39.2 seconds
Top speed, 64-65 mph

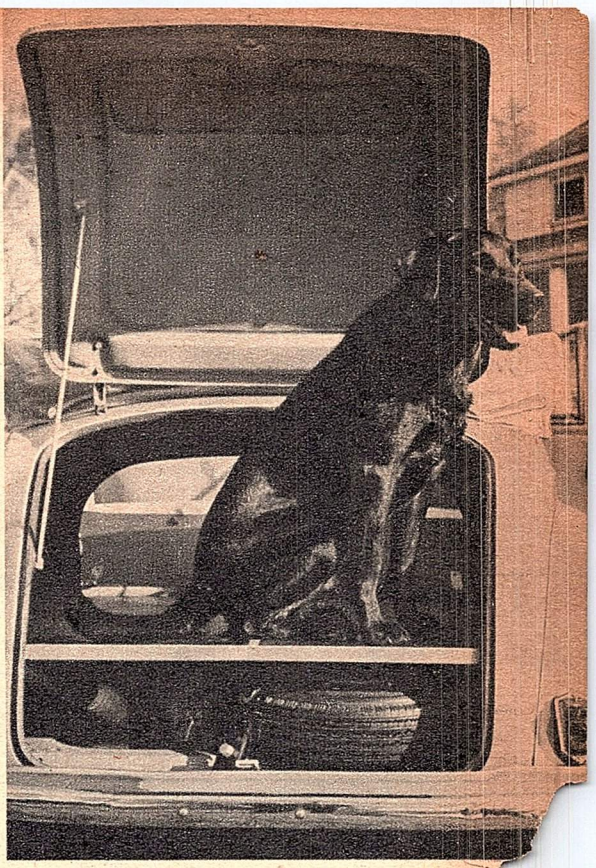
stolen from the state's reserve pile to let my tires get a grip on the driveway which goes straight up for more than a tenth of a mile.

There is, however, another angle to the story of why I was interested in how the Minor could climb a tough hillside. Some two hours before Baker arrived, I tried going up the same path in my Cadillac to check the game trails. About halfway up the Caddie lost traction on wet leaves and started digging a hole to Red China. With some branches and sticks, I got it undug only to have it start sliding like a greased pig in a laundry chute a few feet further on. When the Caddie finally balked and refused to climb another foot, I was forced to back all the way out. Later that day, the Minor went right over the spot where the Caddie had died and it kept right on going all the way to the top.

One of the surest ways to test good suspension and roadability is to sail down







Twelve-volt battery in the upper left photo looks almost as big as the 56-cubic inch, 27-hp engine which gives the Morris a top speed of about 65. Pictures below it and at the right show how back-seat cushion folds forward to form a level flooring and to provide exceptionally large luggage space for a small car.

a regular hardtop mountain road with an over-enthusiastic throttle. As soon as a really steep grade starts to wind and twist, at high speeds, you do one of two things. Either you sail off into space like Halley's Comet or you get to the bottom in one piece. I tried this with the Morris and it stuck to the road like a nailed-on toupee. On the hard curves and bends, even though I was coming down a high-crowned steep descent with open throttle, there was not the slightest trace of distress and the little bucket held its course like a marble in a groove. In this respect it reminded me of the German Porsche. I got out and looked under and found the torsion bar suspension very similar to that of Dr. Porsche's Porsche, without the trailing arm.

Before going on to the regular highway road test I would like to say that in addition to its top handling qualities, this is the car for the guy who has a hard time parking. Due to its 86-inch wheelbase, snuggling up to the curb is as easy as finding a good looking girl in Dallas, and almost as much fun, particularly when you see old Blood Pressure Ben up ahead of you trying to wrestle a tank-like barge into a space big enough for three Morris Minors. And before I forget, another feature (and a rare one with these small cars) is the trunk space which is large enough for a couple of fair-sized murder victims.

The road was clear and the cops were thick when I made the road test. And this leads me to another good Morris feature. Unlike M.G.'s, Jags, Allards, Cunninghams, etc., the Morris looks as innocent of all wrong-doing as would Senator Tobey in a gin mill. Consequently, even though I passed a State cop going the opposite direction while I was traveling at full throttle, he couldn't have paid less attention to me if I had just been elected Vice-President. This car would [*Continued on page* 165]

Lo, the Poor Moose



During the mating season a bull is quick to accept a challenge to combat. This is the time to use a moose call—but be careful!

Good sport, you say? Imagine yourself deep in the woods, miles from the nearest road, with 1,000 pounds of dead meat on your hands!

By Raymond R. Camp

Rod and Gun Editor, N. Y. Times

THERE'S a story about a brave hunter who had an ambition to capture a wildcat alive. When he finally succeeded he had to yell for help to let it go. Moose hunters are in a similar category. I haven't seen one successful moose hunter who hasn't found the job too big for one man to handle.

The overpowering desire to kill a big moose has been something of a puzzle to me for many years. As a matter of fact, I began to wonder about it less than five minutes after I had pulled the trigger that ended the long, hardy career of my first moose. I have reached the conclusion that the driving force behind this whole thing is the desire to lean back in a chair at the club, flick the ashes nonchalantly from a cigarette, and remark: "Oh, yes, I've shot moose."

I was inveigled into shooting a moose just once and it'll never happen again. Several years ago a friend who operated a flying service in Quebec invited me on

a trip into the bush. Hunting was poor. The season was closed on most animals and the rest were hard to find. My guide, Antoine, suggested, "You hunt moose."

The first day of hunting brought me within easy range of no less than seven moose, of which three were bulls. None of them had a rack worth looking at, so I refused to shoot. The second day brought nine of the animals within my ken but the four moose that were bulls had racks that were woefully uninteresting.

By this time Antoine was losing some of his enthusiasm. After all, he had guided me to no less than 16 moose, a feat which he considered phenomenal, and I had refused to so much as raise my rifle. Having had a suspicion that American visitors were slightly mad, he now had confirmation of this belief.

During the course of the second day I saw two bulls in the morning and one small one after lunch. Since we were about eight miles from camp, Antoine decided it was time the canoe was headed for home and supper. As he announced this decision there was the sound of a terrific crashing on the side of a wooded slope across the lake.

"Anudder moose," Antoine reported. "Mebbe this one big enough for to shoot."

A few minutes later he nosed the canoe alongside a big cedar that had toppled into the lake. Out came the birchbark moose call and Antoine began what he believed to be a series of seductive grunts. A few moments passed and he received an answer. The bull appeared to be only a hundred yards from the beach. The grunting continued back and forth and finally a small moose crashed through the alders and stood with its forefeet in the water.

"Anudder moose," Antoine insisted. "Big one still in woods."

He had hardly spoken when proof of his statement appeared on the lake shore about 150 yards from our position. This animal was not only big; he had a beautiful spread of antlers. This was it.

I held steadily at a point just behind the big brute's shoulder and touched off the shot. The moose stood without moving. I blinked several times, then threw another shell into the chamber.

Antoine looked at me from the stern of the canoe.

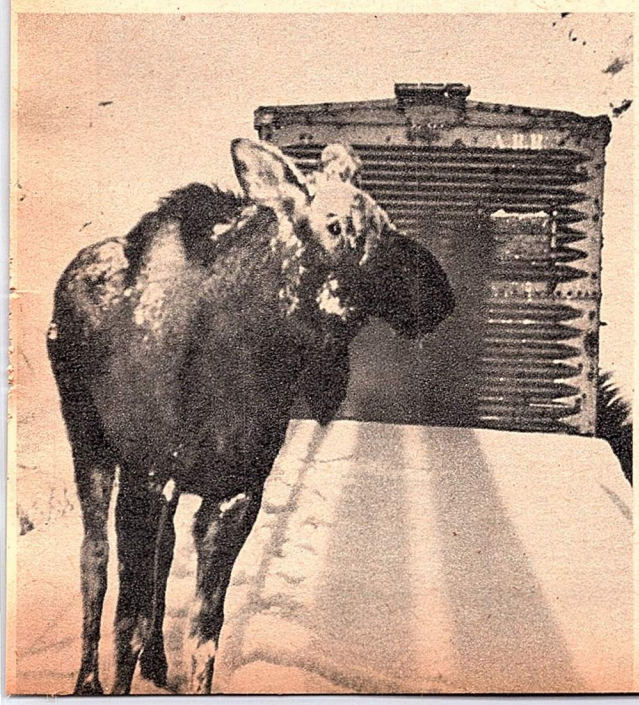
"What you do now?" he inquired.

"I'm going to hit that damned moose," I pointed out, "if it's the last thing I do. Then I'm going to sell all my guns and start taking golf lessons."

"Moose dead," Antoine announced. "You t'ink he stan' there if he's alive?"

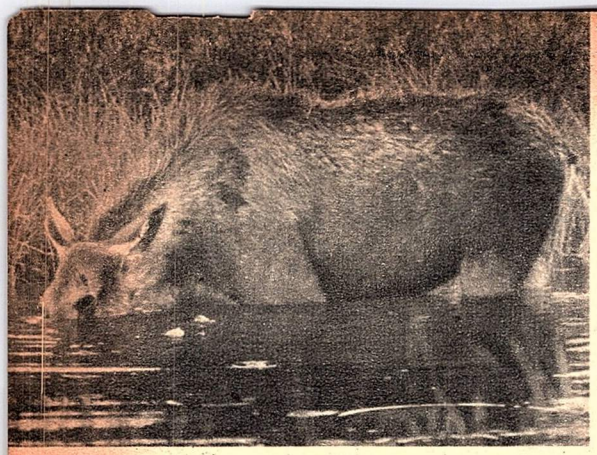
At this the moose began walking out into the water. He walked for 50 or 60 yards before stepping off into a hole. When we arrived in the canoe only his stub of a tail was above the surface. As I recall, the time was just 3 p. m. At 9 p. m. we finally beached the dead moose. The experience of dragging that animal over the shallows is like

Snow was so deep along an Alaskan railroad that a cow jumped aboard. Moose like to walk the cleared tracks and trainmen must shoo them off.



Joe Walker of Falmouth, Me., had so little trouble taming this 700-lb. cow that wildlife officials are studying her to see why she's so friendly.





This cow, nose deep below the surface, is grazing on tender underwater plants at the edge of a pond.

a bad dream. And who did the dragging? I did. Antoine, it developed, had a hernia.

When we had the animal dressed out and the quarters hung in trees for recovery the next day, it was 11 p. m. and I was both tired and hungry.

How that moose managed to move after the bullet had torn his heart to shreds will always remain a mystery. When we dressed him out we found the bullet had passed through part of the chest cavity, mushroomed on a rib and had torn the heart into several pieces.

It took three 14-mile canoe trips to transport the meat to camp, for the canoe was only a 10-footer and was not designed for a big load. After the second of these freighting trips I reached the conclusion that my initial feeling about moose hunting had been the correct one.

If you want to narrow it right down, it's much easier to shoot a moose than it is a rabbit and not merely on the basis of its size. In most instances the rabbit is small and going at a fast clip whereas the majority of moose are standing still at a range that the greenest of shooters would consider practically "point blank." In most areas where the moose is legal game, the brush is thick and a moose more than 100 yards distant is invisible. Therefore, any hunter who could miss a moose in sight would do well to take up some less exacting form of sport such as ping pong or charades.

It's true that the head and antlers of a big bull make an imposing trophy over the mantel but not many hunters can look at this trophy with a memory of a happy hunting experience. They think back on the job they faced getting it out of the woods and the tough time they had getting rid of the meat. You may be one of those hardy individuals who can eat the same thing day after day and enjoy it. If you kill a big moose you can look forward to an appallingly steady diet of moose meat for at least a year, for the chances are you'll find none of your friends in a receptive mood when you offer them a juicy moose steak.

The float plane [*Continued on page* 166]

I. B. Baker of Ohio, right, and his guide Hank Haskins seem to be happy over their 1,100-lb. trophy shot in Ontario. Report states the meat went to charity but neglects to explain "how."



NEW for the SPORTSMAN

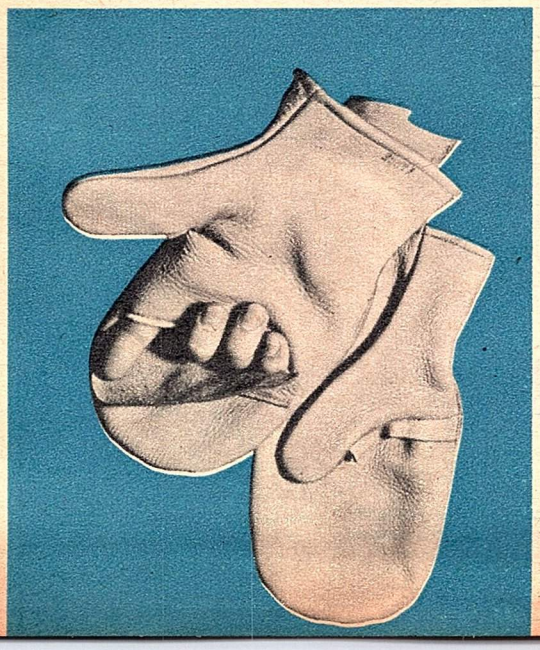


Kamp Kover shown open at left, closed at right, fits any pickup truck. It comes with side canvasses, tail curtain, folding table and two beds, each 33 in. by 6 ft., which can be used as seats. R. & G. Mfg. Co., Eugene, Oregon.

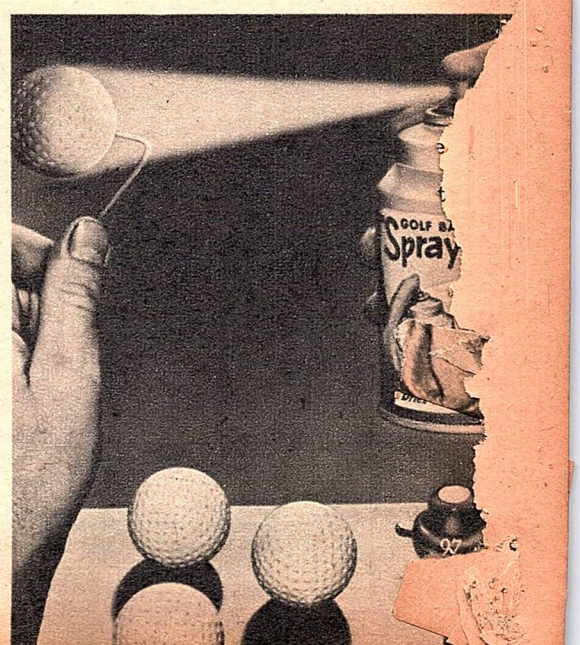


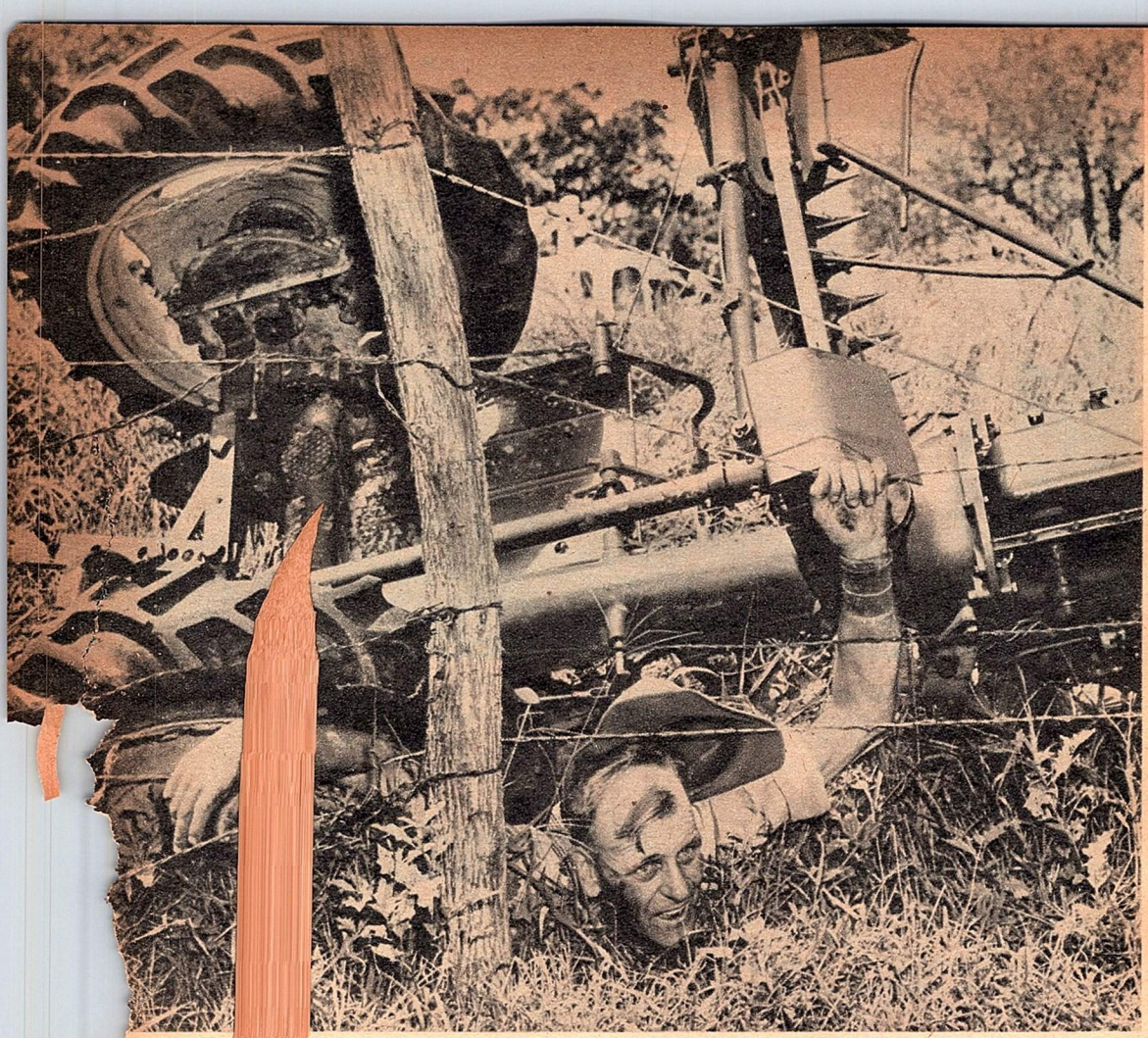
Match Pistol used by world's champions is last word in precision. Special custom grips. Made by Hammerli of Lenzburg, Switzerland. Imported by American Arms, North LaSalle St., Chicago.

Shooter's Mitts of genuine goatskin remain soft and pliable even when wet. Lining is flannel. Trigger finger slit has storm flap. Norm Thompson, Portland, Ore.



Spray-New will give your golf balls a whiter-than-new finish in a few minutes. Comes in 12-oz. aerosol dispenser. Enough for 50 balls. Fed. International Co., N. Y.





Walter Bennet suffered no serious injuries when this tractor he
erating near Independence, Mo., overturned, pinning him beneath it.

W n Death Takes a Holiday

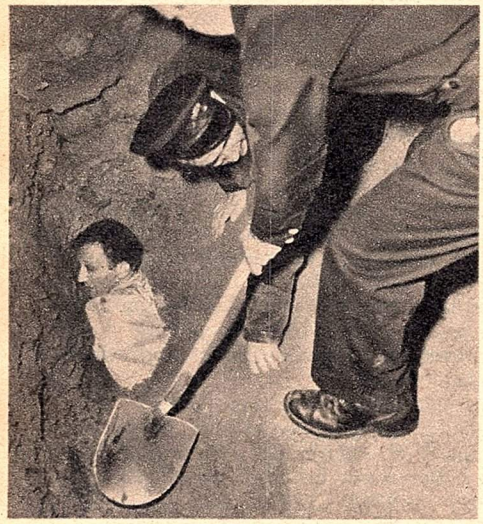
If you're worried about man's powers of survival read about these miraculous escapes—and relax.

By I. B. Neer



Congratulating himself is Clyde Baldosser who escaped the wreck at right with only a badly cut hand.





When Ben Rothbard was buried alive for more than a half hour, just the top of his head showed, top. After his removal, above, it was found he suffered only minor bruises.

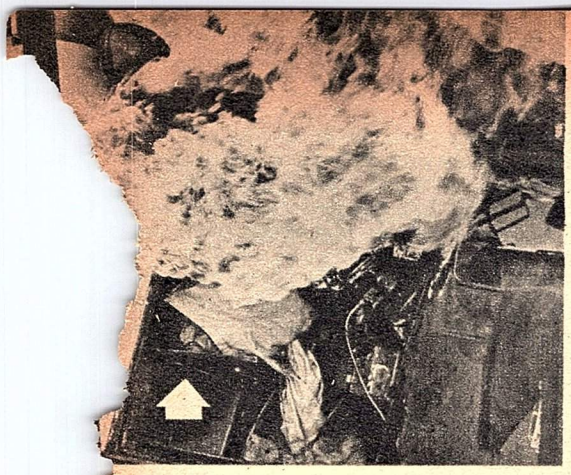
SWIRLS of dust momentarily blinded Charles W. Arter, a brawny pitboy, as he trudged along a mine field in South Yorkshire, England. Two miners behind him shouted a warning, but it came too late—Arter's foot went over the brink of a shaft.

He clawed desperately at the air as he went down, his screams floating hollowly from the yawning, black pit. It was certain death—the shaft was 1,554 feet deep and no man can survive such a drop.

But, halfway down, Arter overtook an elevator cage which was making a swift descent with a load of miners. He landed gently on the roof, rode easily the rest of the way down and walked away completely unharmed as the astounded men stared speechlessly!

Death takes a holiday like that more frequently than you think. Miraculous escapes from accidents that no man could seemingly survive are constantly confounding the statisticians, safety experts and police. People fall fantastic distances and live, get themselves hurled by automobiles and locomotives and emerge without a scratch, have buildings topple on them and survive, get into the lethal paths





Dampened asbestos blanket was the only thing that saved truck driver William Cox from the roaring flames when his butane truckload was wrecked.



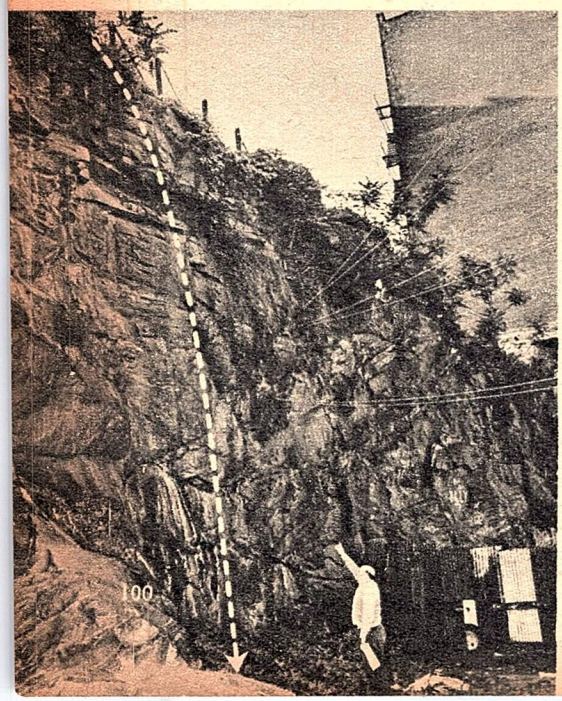
Three inches more and the wheels of this streetcar would have passed over the jay-walking pedestrian. Luckily he got only cuts and bruises.

of hand grenades, bullets and flying spears and walk away unharmed.

Witness the fantastic experience of a two-year-old boy who virtually came back from the dead in New York City last Spring. Thomas Paiva, Jr., toddled into the bedroom of his home in lower Manhattan and climbed up a radiator to the window sill. He swung open the casement window, lost his balance and plummeted downward. He hurtled down 15 stories, landing in a clump of light bushes which could not have broken his fall appreciably. At that point the odds on young Thomas' life were a billion to one. But, what were his injuries? A fractured leg!

If you think that only kids, with their "green" bones, can fall long distances and live, listen to this one. It's a case cited by Hugh De Haven, director of the Crash Injury Research Clinic, who has made a lifelong study of falls and crashes. A Staten Island, N. Y., workman was setting up the rigging of a scaffolding atop a 175-foot smokestack when he slipped, fell 150 feet, made an eight-inch depression on a slope close to a wall, bounced over the wall, fell another ten feet and landed on the lower level. Dead? Not by a long shot. He suffered three broken bones and other non-fatal injuries.

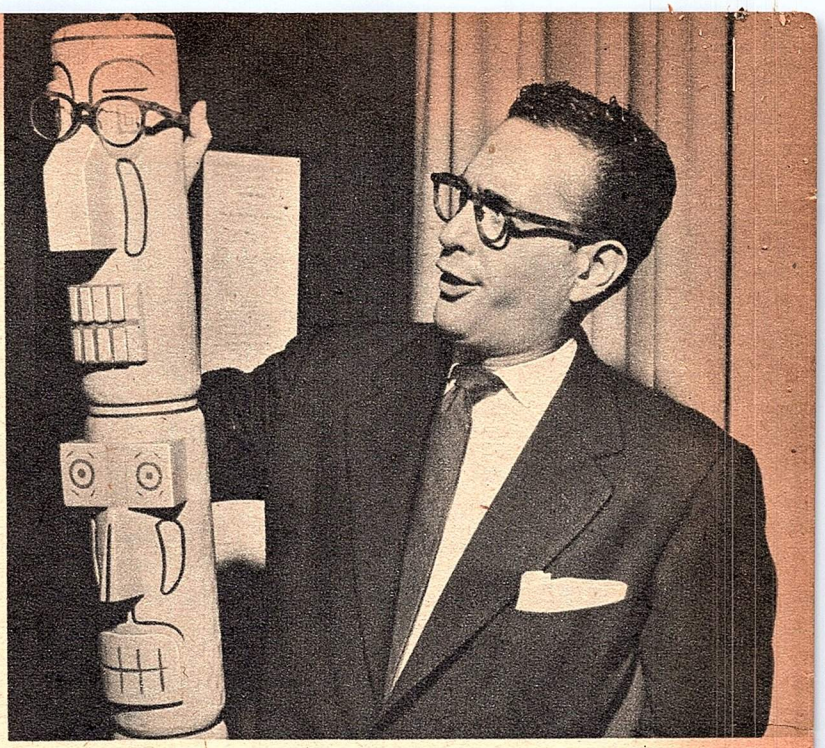
But these cases were mere bunny hops compared to the unbelievable fall of British Sergeant N. S. Alkamade, who was in the tail of a Lancaster bomber over Germany in March of 1944 when it was struck by enemy fire. The entire fuselage was suddenly enveloped [*Continued on page* 170]



Dotted line, left, shows the 50-foot plunge taken by six-year-old Douglas Flick of the Bronx, N. Y. He landed in soft earth, below, and went home after being treated for scratches.



hobby
HALL OF FAME



It's totem war for this famous radio and TV humorist. His rooms look like the Happy Hunting Ground of the cigar-store Indians. He likes this one. "It's handy to hang your wash on."

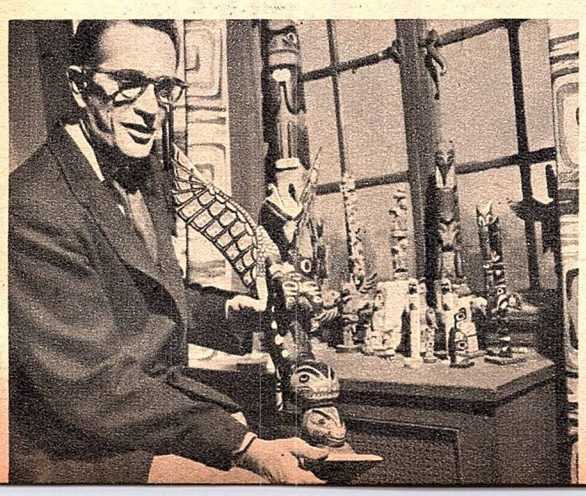
ROBERT Q. LEWIS— Top Man on the Totem Pole

THERE are tall ones, short ones, fat ones and skinny ones, but they all have one thing in common—they're the ugliest and most bizarre totem poles Robert Q. has been able to find.

It started with Cutie-Pie a number of years ago. This delightful little number was given to him by the Chief of the Otoes Indian tribe of Oklahoma when he was made honorary chieftain. His friends saw it and have been adding to his collection ever since. Now he has many dozen and they threaten to run him out of his apartment. "They're not exactly cuddlesome," he says, "but they sort of grow on you."

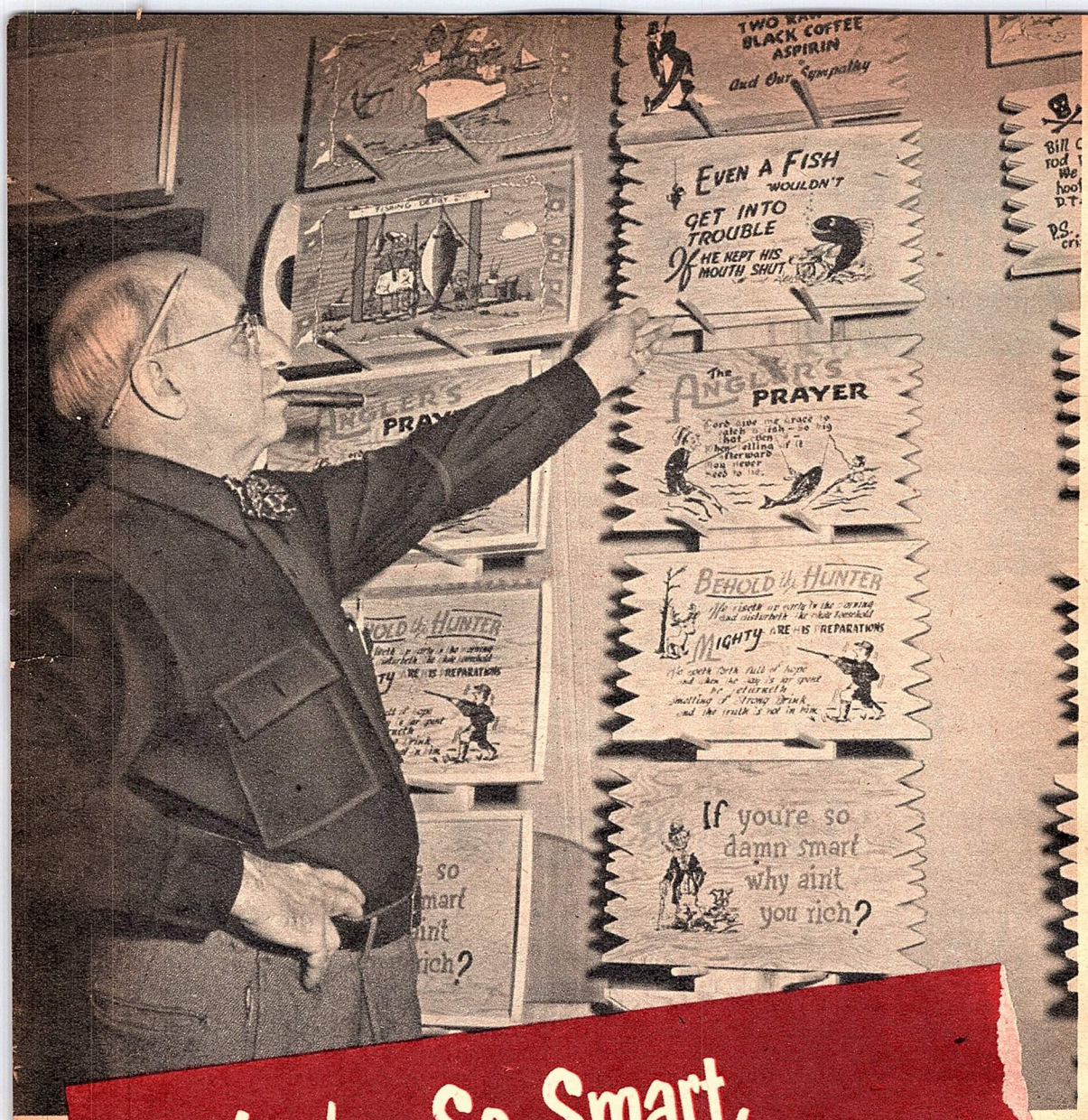
Bob has only one worry—termites. •

Here's part of Robert Q's collection. Totem poles require no special preservatives, gluing, polishing or careful handling—just a weekly dusting.



"I know it's a beauty but where'll I put it?" he seems to be complaining to one of his many friends who are helping him expand his collection.



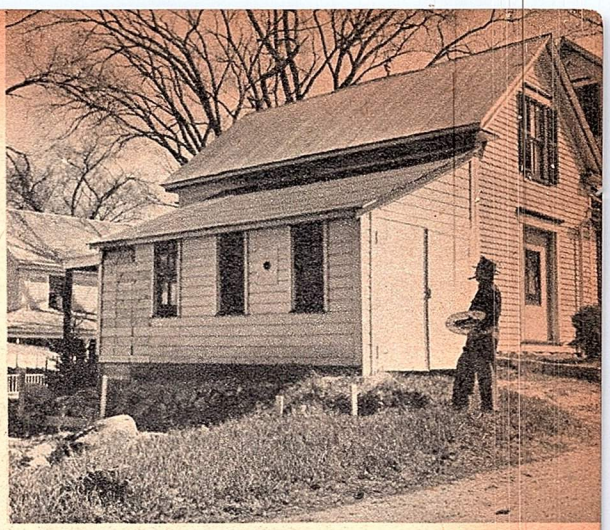


If You're So Smart, Why Ain't You Rich?

That's only one of the questions which Albert R. Smith, world's champion heckler, keeps asking on his saucy signs.

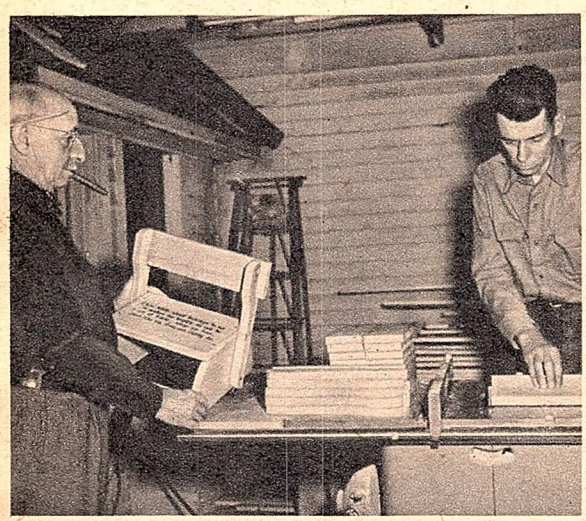


Painting of fish which started Albert Smith producing that type of sign still occupies place of distinction in his Bridgton, Me., place of business.

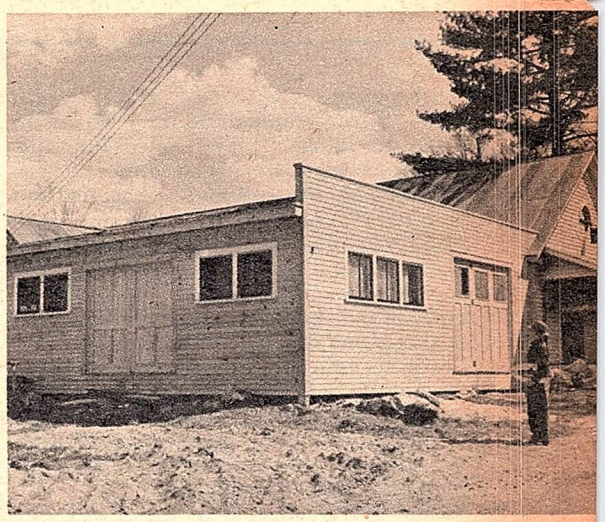


Fourteen years ago, Smith started his sign business in this tiny shed, rented for $9 per month. Now, he owns the shed, the house—the whole block.

Worker cuts out sections on a power saw while Smith holds a completed youngster's stool. Useful novelties form great part of company sales.



Present home of the Smith Sign Company is many times the size of the original shed. It contains a complete woodworking section and printing plant.



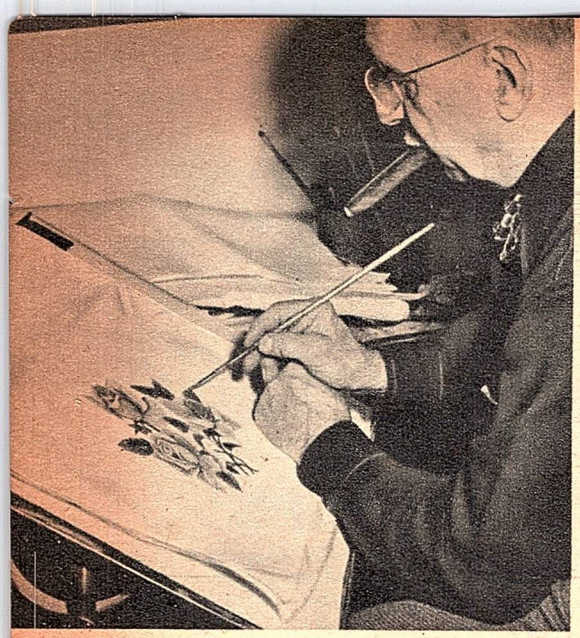
By Oscar Knight

ONE summer afternoon a few years ago, Albert Smith sat in his little sign shop in Bridgton, Me., just taking it easy when a man dropped in with a large trout under his arms. He asked Smith if he could paint a lifesize picture of the prize catch in enduring paint.

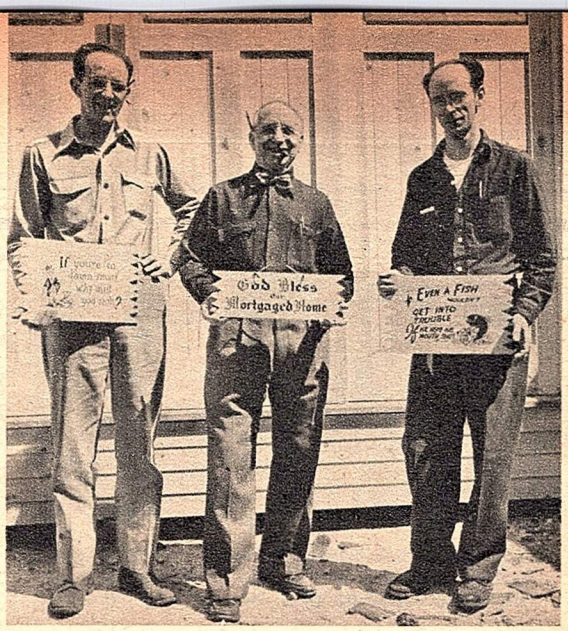
Smith confessed that he had never before painted a picture of anything, but he'd try.

In a few minutes he had traced the outlines of the trout on a diagonally sawed birch board which had cut, ragged edges thus providing a rustic effect. Then he began sketching and as he added his colors, the fish grew to lifesize proportions.

Jubilant over the artistic success which he never realized he had, Smith made a couple of copies and placed them in his window. A few days later, when summer tourists were wandering about the streets of Bridgton, a man stopped to admire



Even though he never took an art lesson in his life, Smith paints a complete, life-like picture of a rose in bloom on the scarf in about 15 minutes.



Albert Smith with Smith, Junior, his business manager, at left and Curtis, right, hold up three of the signs of which thousands are sold every year.

the fish panels. He asked Smith if he did them. "Sure," replied Smith. The man wanted to know if they were for sale. Smith said they were and announced a price several times above what he had originally planned.

"Wrap 'em up," said the customer. Then, looking around the tiny sign shop, he turned to Smith and asked, "What'll you take to make up a dozen samples of trout and the same number of salmon?"

Smith bit into the cigar he never smokes and scratched his head. Finally, he named a price. The customer bought the package deal and gave him a check for a retainer. "Ship them to the Sportsman's Show in New York," said the customer.

When Smith deposited the check, he learned that the signature was that of one of the largest and most successful toy dealers in New York. A few weeks later he heard from the man; he wanted a thousand fish panels in a hurry! Smith marshalled his entire family into the shop and filled the order.

Subsequently, this man became his agent and Smith shipped him tens of thousands of fish plaques which retail for from $1 to $1.50.

Thus began the fabulous success story of Albert R. Smith, an ex-insurance salesman to whom the doctors gave only a few years to live and whom they advised to spend that short time in the country in peace and quiet. In one chance meeting he discovered a talent which was destined to provide him with one of the most successful private enterprises in New England, a business which nets him in the vicinity of $100,000 a year.

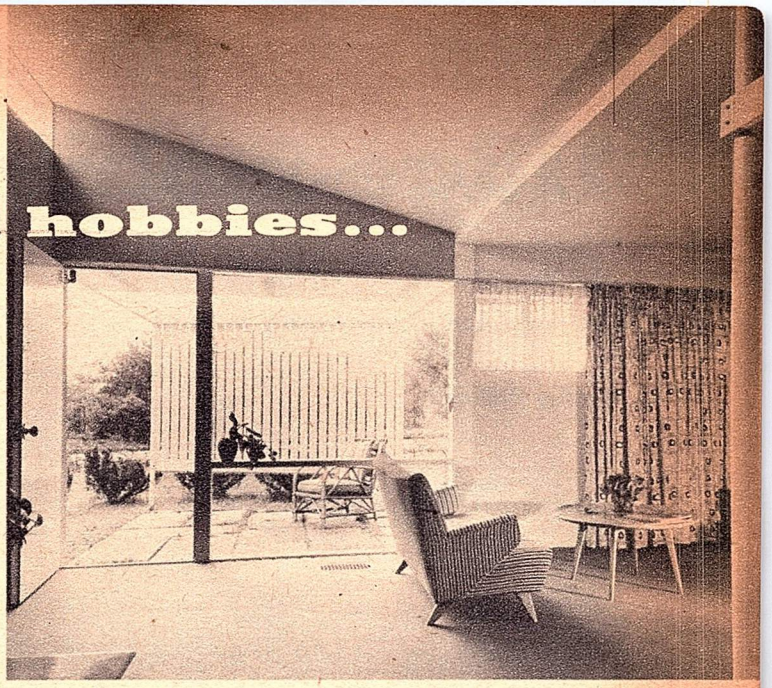
When Smith's health failed him 14 years ago, doctors ordered him to give up his regular job and take it easy so that he could finish out the couple of years they allocated him. Provoked at the doctors' sentence of doom, he stubbornly made up his mind to get well in spite of them. He licked the malady that felled him, all right, but in the process he became cynical toward his fellow men.

About this time, his young son Curtis began displaying a natural talent as a letterer and so the older Smith started a tiny sign shop to give his son a job and to occupy his own mind so he wouldn't worry about his illness.

To get the project under way, he talked his landlord into letting him put up a tiny shed on the house which he rented. Then, with two ten-cent paint brushes and a few bottles of colored paints, the Smiths were in business. They began lettering signs for neighborhood consumption, and the stores bought up his output.

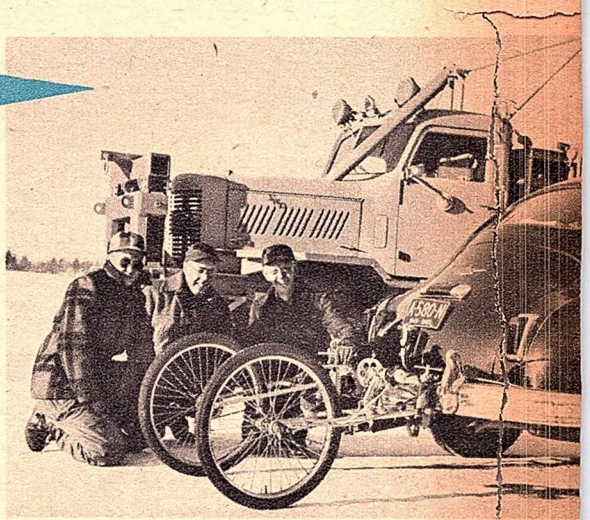
Then occurred the episode of the trout portrait. Smith, inspired by this success, graduated into painting advertising cards, small billboards, price tags and fishing signs for local fishing clubs. Soon enough small orders were [*Continued on page* 169]

crafts and hobbies...

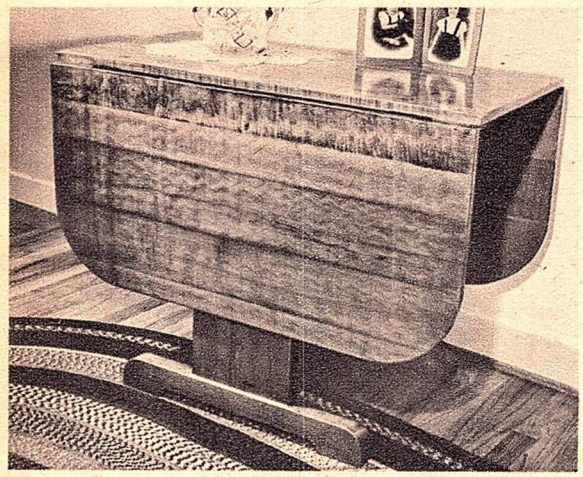


Planning a home? Then you should know what to include and what to avoid in your dream house blueprints. See page 112.

Engineers of the National Safety Council check speed and distance-measuring devices that make winter driving safer for you. Starting on page 126, Car Care discusses the merits of chains and snow tires.



Colonial table constructed of glued-up maple will be a striking addition to any living room, regardless of the style of your present furniture. Consult page 110.



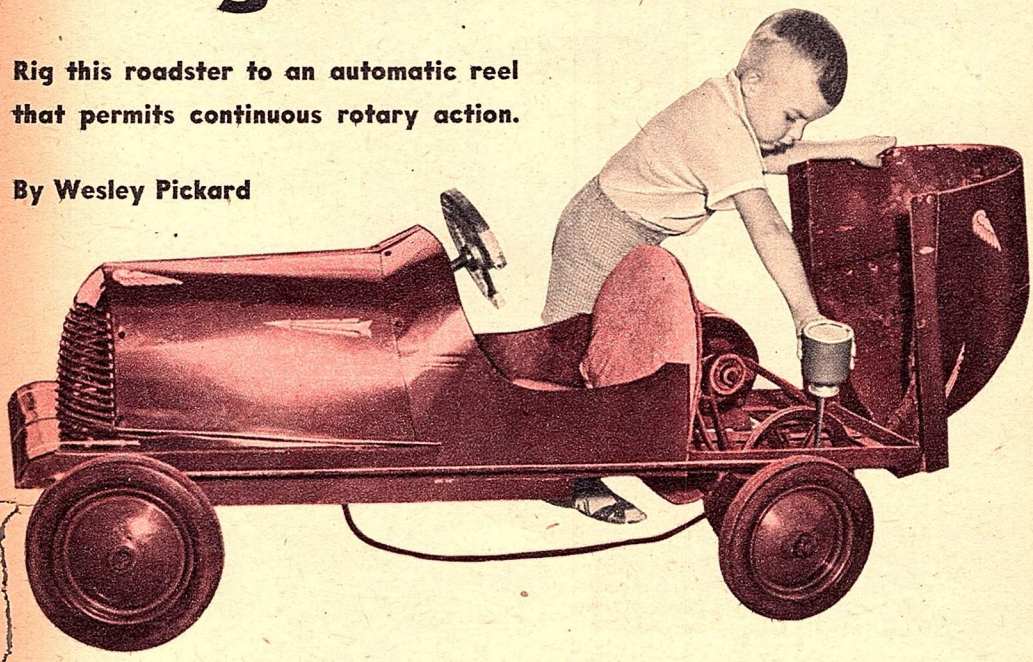


Midge-mobile is powered by a ¾-hp motor. By connecting cord to an automatic reel, car rotates in fixed circles. Turn the page for full building data and plans.

MIdge-mobile

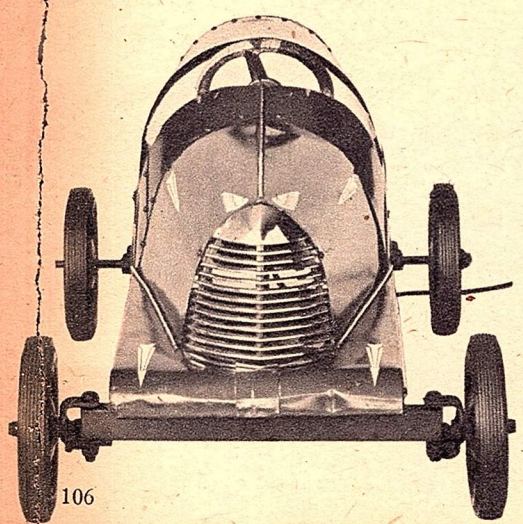
Rig this roadster to an automatic reel that permits continuous rotary action.

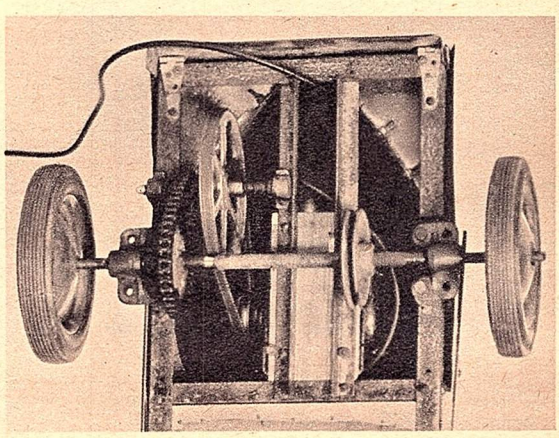
By Wesley Pickard



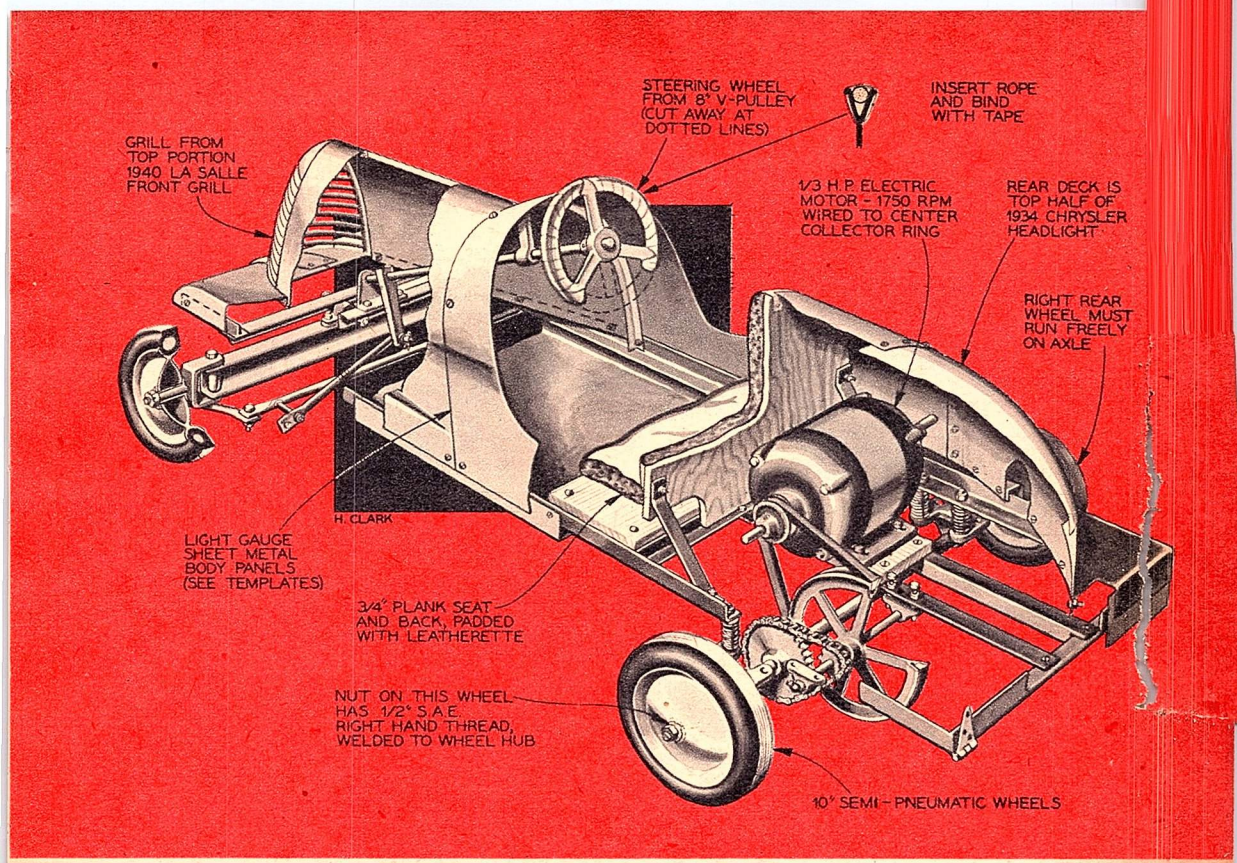
WATCHING Junior spin around in his own motor-driven speedster is a thrill you won't want to pass up. Powered by a ⅓-hp motor, the car is perfectly safe in operation, and may be wired for driving in one of several ways. The simplest, of course, is merely to attach a long cord (about 60 ft.) to the motor, connecting it to the outlet nearest to your lawn.

A much better set-up however, is mounting an automatic reeling device on a post in the center of your lawn or yard. (See diagram on page 109.) A 25-ft. cord will be sufficient. With this assembly, your midget McCahill can travel all around the post in a radius of 25 ft., as the reel automatically feeds more cord or takes up any slack. In fact, for younger kids you may even want to lock the steering so that the car travels in a fixed circle without any possibility of the driver changing the course. And with this reel, there will be





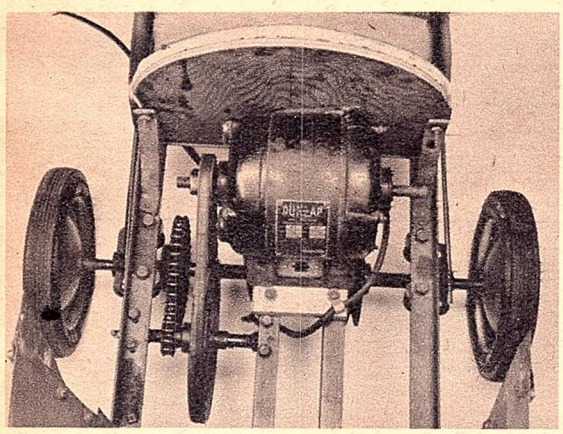
Left: Head-on view shows grill taken from a 1940 La Salle. Above: Underside of the motor mount. Note placement of hinges for rear hood.



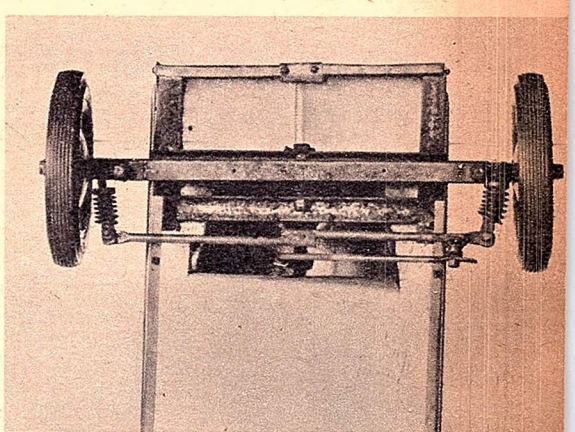
no snags, no twisted cords. The reel, available from the Appleton Electric Co., 1701-59 Wellington Ave., Chicago, costs about $18. Specify reel No. 7S2.

My own design on this car utilized the top of an ironing board for the body base, and templates for the body were cut to this shape. However, you can substitute plywood for a body base. Since the chassis is larger than the body itself, it was designed and assembled later in order to conform perfectly to the body dimensions. Chassis is 1-in. angle iron throughout. Templates for the body, which is assembled with $\frac{3}{16}$-in. stove bolts, were traced onto thin-gauge sheet metal, and were cut with tin snips. The sharp edges around the seat were turned under and nailed to the wooden base.

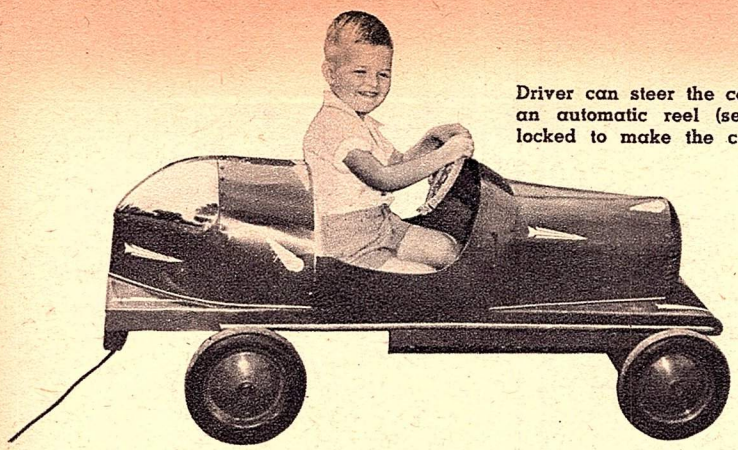
The steering is very simple. C-shaped knuckles were made of strap iron bent to shape in a vise. Holes were then drilled to



Motor activates only the left rear wheel by means of two pulleys and a couple of spur gears. The axle is machined from ¾-in. steel rod.



Steering action runs from shaft to drag link, from drag link to tie rod fastened to knuckles at each end. Rubber shock absorber boots are for show.



Driver can steer the car himself, but if you use an automatic reel (see text), steering can be locked to make the car travel in fixed circles.

accept the king pins and axle. The latter can be made in three pieces: two ½-in. stub axles and a length of 2-in. channel beam. The front wheels pivot on a single truck U-joint bearing with a bolt slipped in from the rear and welded around the head. This method provides knee action for the front wheels, and assures firm traction for the rear wheels at all times, even on unlevel ground. The tie rods are welded to the knuckles; cotter pins are used to prevent the nuts on the ends of the stub axles from working free. Drag links from the steering arms to the tie rods are fastened in a similar manner.

Most of the motor mounting and drive assemblies were turned out on a lathe. Note that the drive is hooked up to the left rear wheel only. Two pulleys are required: one 1½-in. unit on the motor arbor and an 8-in. pulley mounted on a rod which is connected to the frame with two truck bearings identical to the one used on the front wheel assembly.

A 34-tooth sprocket is mounted on the rear axle, which is 27 in. in length and turned from ¾-in. steel rod. An 8-tooth sprocket is mounted on the outside of the larger pulley. Use ½-in. pitch chain, as indicated in the sketch on opposite page.

The rear deck of the body is hinged along the back of the car. This permits you to fold back the entire rear end, exposing the motor and drive assembly for adjustment and inspection. The front portion of this "hood" merely rests on the seat upright.

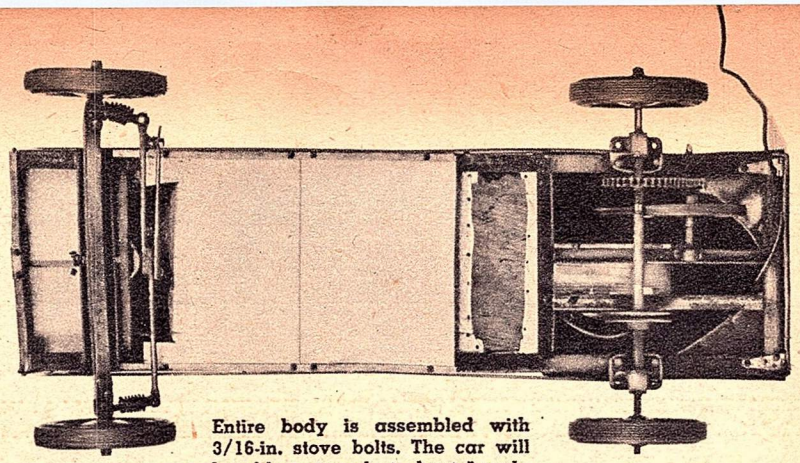
The seat itself is bolted to the chassis, and both seat and back rest are upholstered with foam rubber. •

LARGE-SCALE PLANS

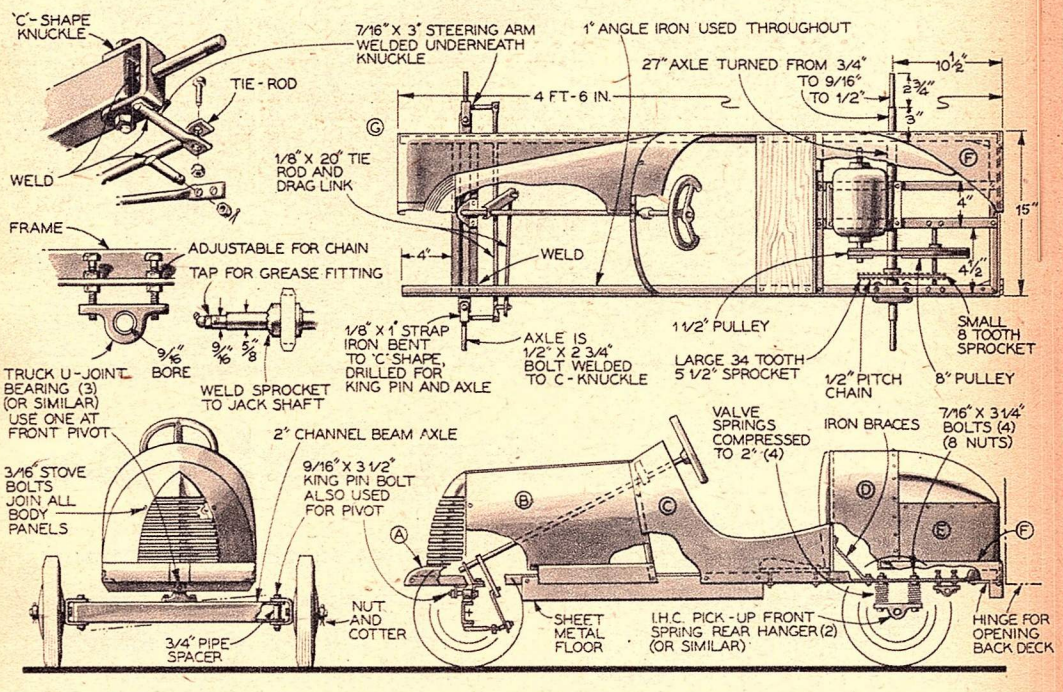
will greatly simplify construction. Send $1 to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Connecticut. Please specify Plan No. HJ-20.

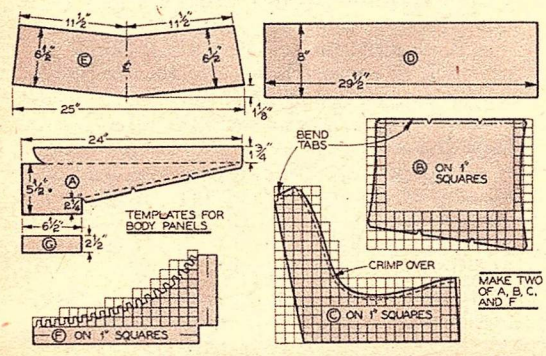


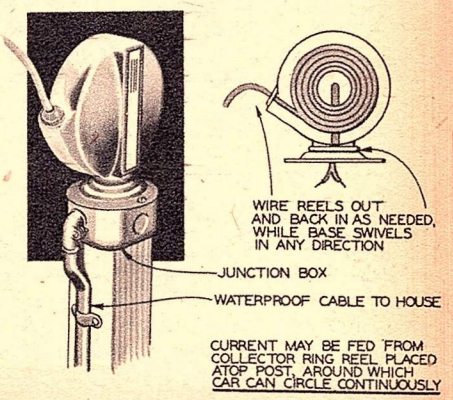
Minor maintenance job is tackled by both builder and driver. You'll find MIdge-mobile is an ideal father-and-son project.



Entire body is assembled with 3/16-in. stove bolts. The car will be able to travel at about 5 mph.









Note ample leg room when the leaves are raised. The cross brace has been rasped to simulate an antique effect.



Drop-Leaf Table

Occupying only 19 in. of floor space when not in use, the open table will seat six comfortably.

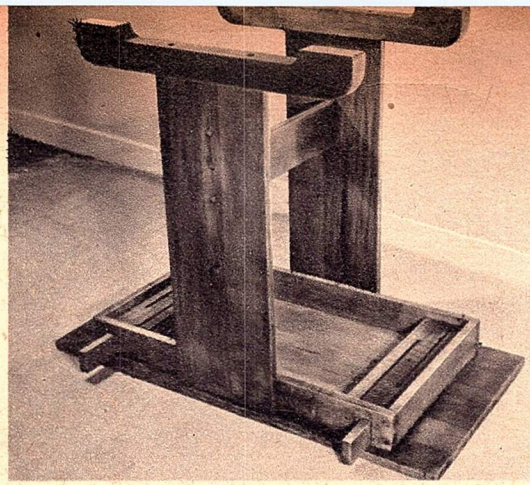
By Karl Greif

THE best Colonial furniture has much in common with modern pieces—simplicity of line coupled with a functional approach. This graceful Early American table, which will feel at home in any dining room, seats six persons easily and with plenty of knee space—no one "gets a leg."

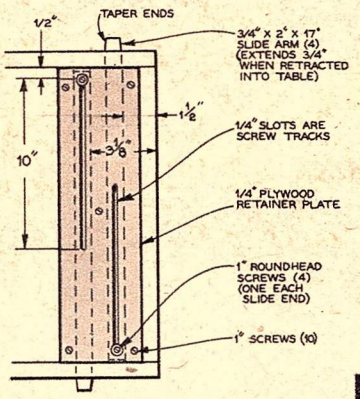
Although power tools will speed your job, common hand tools are sufficient, for nearly all parts of the table are of standard net stock widths, and require only cutting to length. Maple was used in the unit shown.

The top and leaves may be glued up, planed and sanded at your lumber yard. This solves the biggest problem, and the labor cost for that part of the job is nominal. A plank 19 in. wide by 9½ ft. long, ¾ in. thick is required. Specify that it be of well-seasoned wood. Butt joints are used throughout. Screws are counterbored, with pegs driven in over them and sanded flush. A sandpaper block and a rasp are used on all edge surfaces and corners to produce a worn appearance.

The first item of construction is the box-like frame which contains the slide leaf supports and their guides. The four outside frame pieces of [*Continued on page* 162]

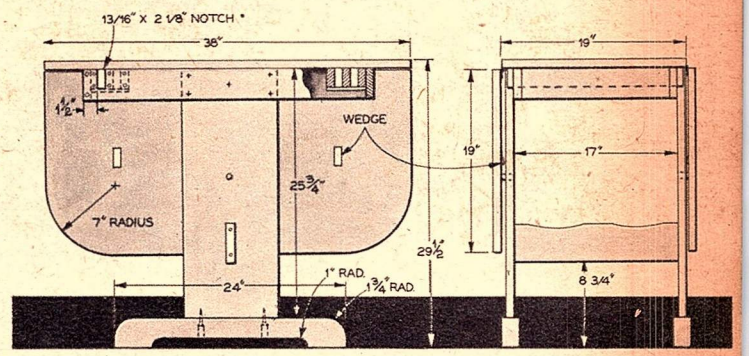


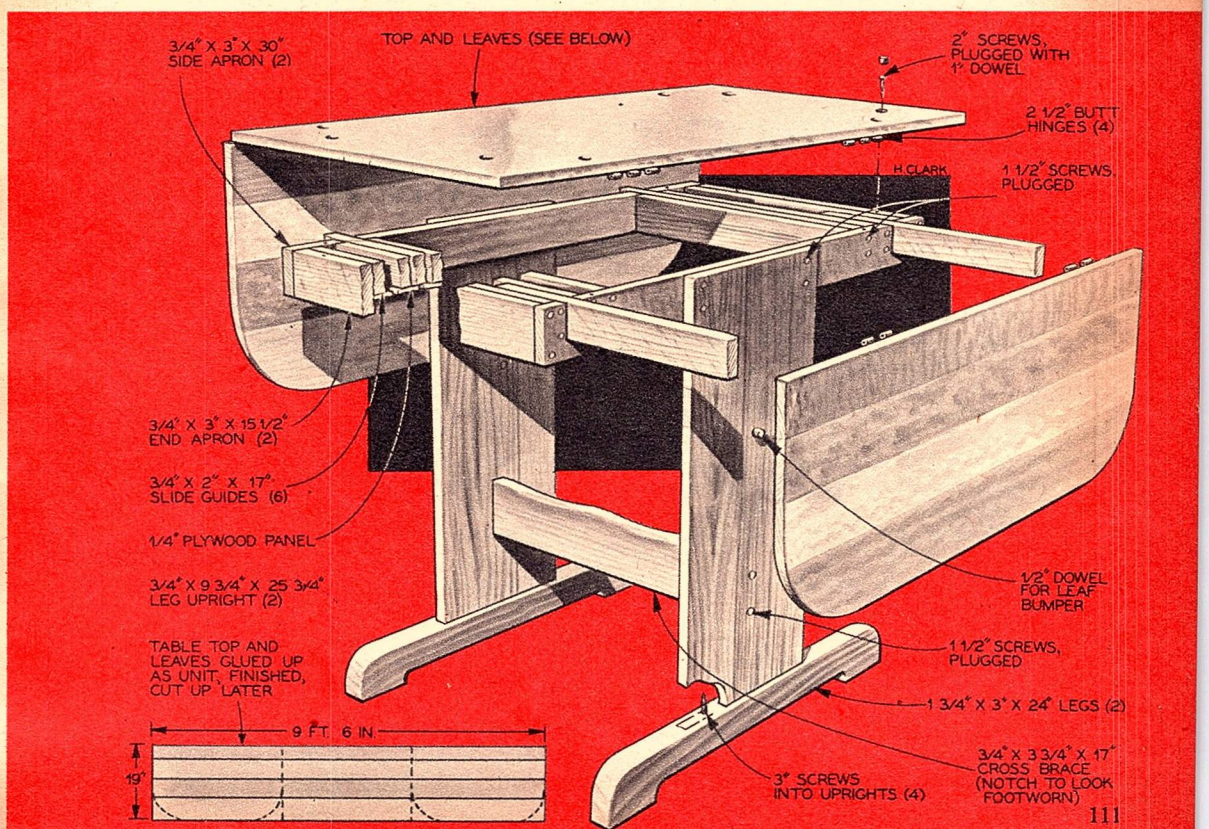




BOTTOM VIEW OF SLIDE DETAIL

Left: Inverted view reveals slide assembly. Right: That satiny surface is evidence of a thorough finishing job.







pitfalls to avoid in SMALL HOME PLANNING

By Don Reiman
Sanders, Malsin, Reiman Architects

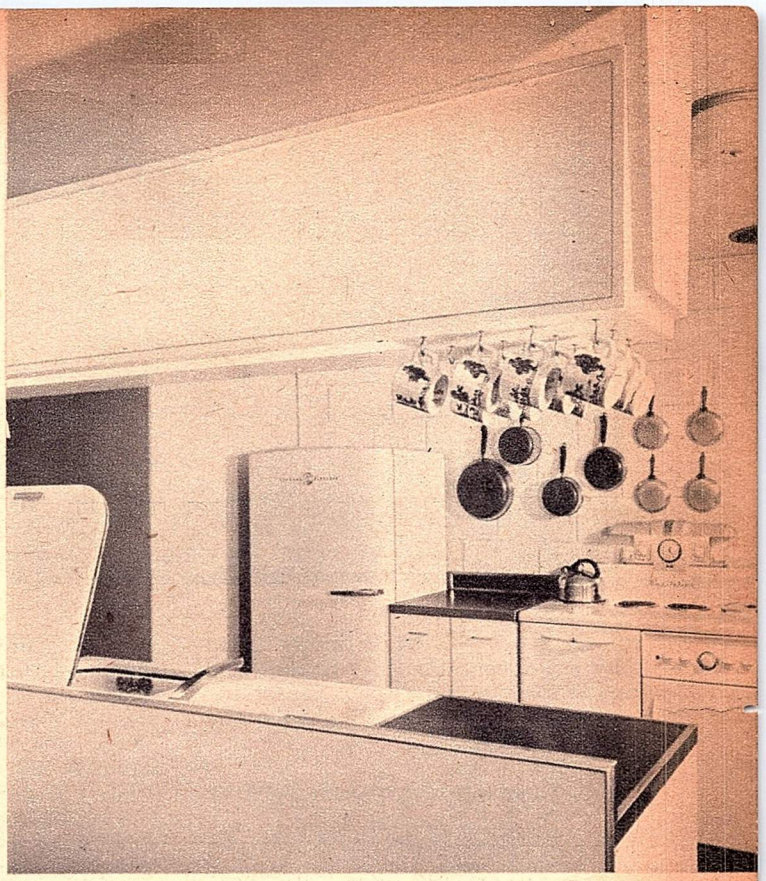
AS the value of the dollar decreases, and government restrictions on building become tighter, we seem destined to live in smaller and smaller houses. A minimum house can satisfy the complex requirements of family life only through intelligent planning, whereby each square foot is designed to contribute to better living. Let's consider the most important details. Sketches are lettered to match the respective subheads.

(A) Appearance

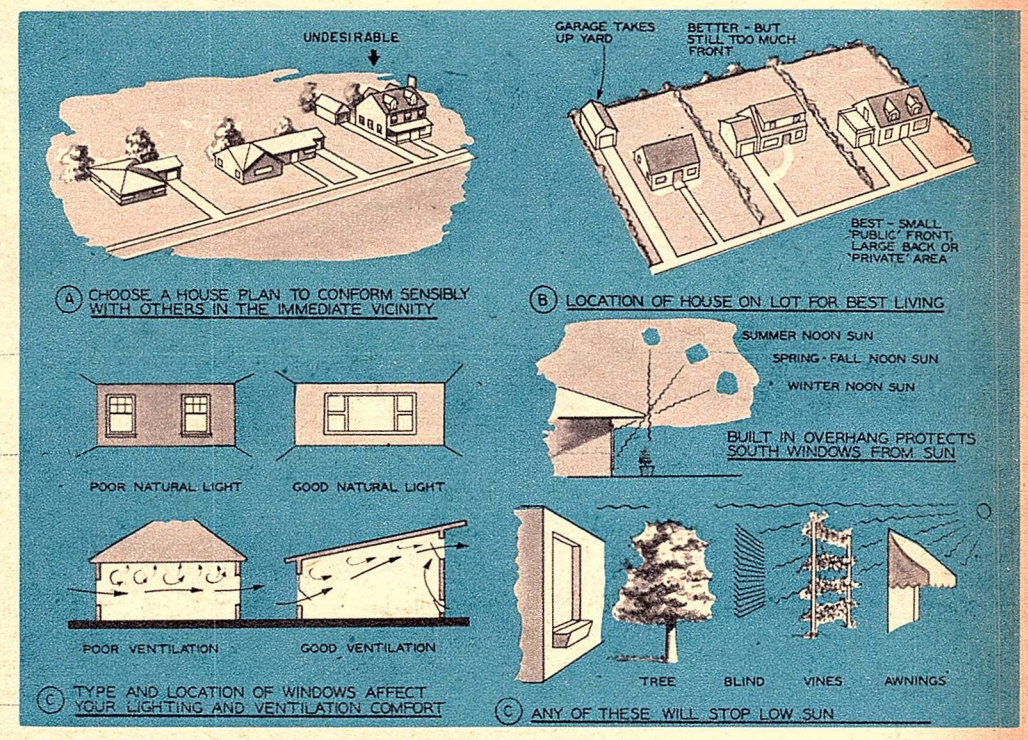
A small house should be simple both in form and in the choice of materials. The scale and general type of house should conform with the neighborhood and with adjoining houses in order to achieve harmony and pleasing variety. Materials should be chosen on the basis of their ability to do the job, as well as on appearance.

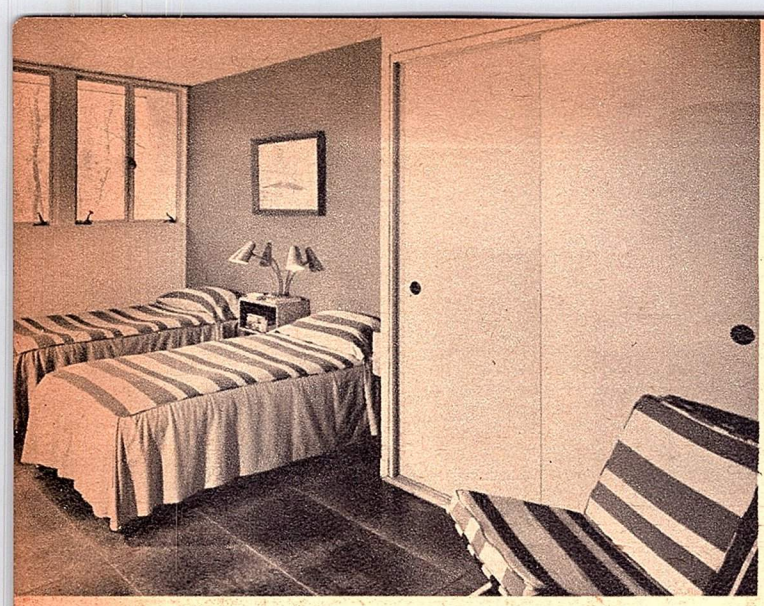
(B) Relation of House to Site

The house should be situated to give desired amounts of sunshine, breeze, sound insulation, and privacy. Plan to utilize that portion of the land not actually built upon for a variety of outdoor functions. The house-to-site relationship increases in importance as the size of the lot decreases. A more spacious feeling can be achieved by organizing the exterior spaces so that they relate closely to the interior. For example, how should you plan an adequate private garden which the bedrooms and living



Work areas, like this kitchen, should be planned so that the equipment is arranged in a step-saving, logical manner. Note how flourescent lighting has been built into supplementary storage bin over sink.



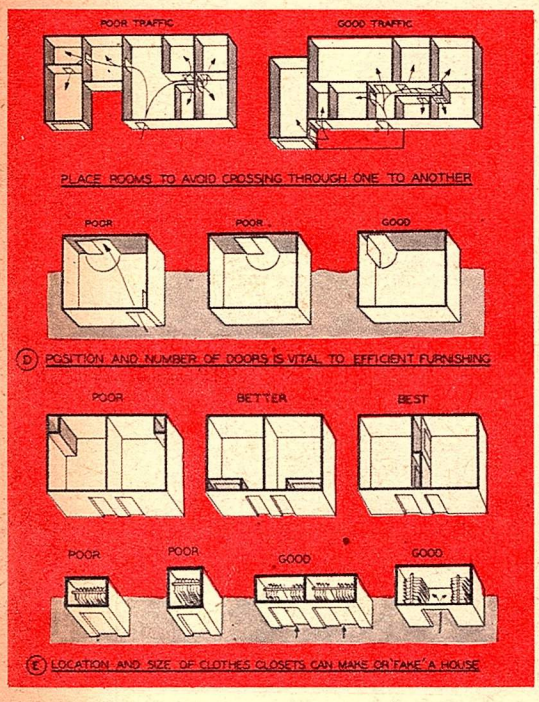


Sensible bedroom layout features an ample walk-in closet with "dead storage" space on top, and plenty of windows which, in this instance, are recessed from the outer wall to form a built-in overhang.

room may face? Sketch B shows three methods. Obviously, the third is best. The relation to the sun and the location of adjoining houses further determines the position of the house.

(C) Relation of House to Sun and Wind

Large glass areas facing south take advantage of solar radiation in the winter. However, they must be shielded from the hot summer sun by adequate overhangs.



Overhangs also decrease glare by reducing the direct view of the sky.

Because the eastern and western sun is low, an overhang does not shield us completely, and we must use low trees, fences, blinds or awnings.

Glare is produced by a contrast of light and shaded areas. This is intensified as window openings are made smaller. In large openings the level of illumination in the entire room is raised and contrasts are at a minimum. Glare-producing surfaces, such as lightly colored pavements, should be eliminated where large glass areas are used.

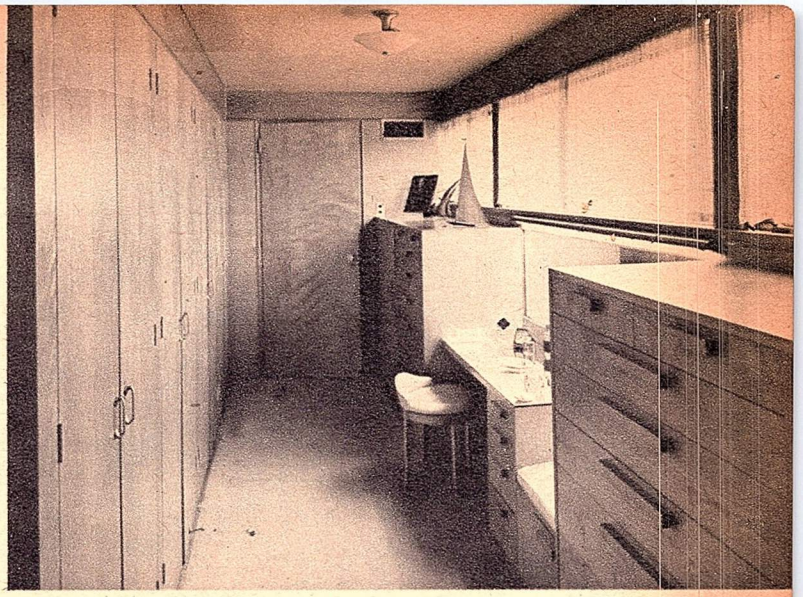
Prevailing winds and proper placement and type of windows must be taken advantage of for good ventilation. Poor window locations produce "dead" hot air pockets. The sloping ceiling keeps the hot air moving toward the window and outward as it tends to rise.

(D) Traffic Circulation and Ease of Furnishing

One of the most common faults in small houses being built today is the poor traffic circulation which forces you to cross rooms diagonally in order to get from the entrance to other points of the house. This makes it difficult to furnish the rooms correctly and to use the space to best advantage.

On entering a house, one should be able to reach any room without going through other spaces. The room which is a "dead end" is comfortable and easy to furnish.

The placement of doors and windows is another factor which determines ease of furnishing. Some of these traffic circulation problems may be solved by zoning within the house. Each activity should be organ-



A corridor should be more than a dark, narrow passageway. Utilize this important area for placement of a storage wall, chests of drawers, hobby shop, or a custom vanity as shown.

ized with its interior and exterior area in mind, and these are zoned in such a way as not to be at cross purposes.

(E) Storage

Unfortunately, required space for storage does not decrease, and organized storage space becomes even more important in the small house. You can determine the area you require for storage by totaling the space needed for all your clothing and items to be stored, then adding 30 per cent as a safety and growing factor. In clothing storage allow 3 in. of rod length per suit and 2 in. per dress. The properly shaped storage compartment is essential. In sketch E only the last two closets are adequate. In the third, doors open full 24-in. width, and the "walk-in" type is 6 ft. wide.

In addition to clothing, there is specialized storage in connection with food preparation, dining, recreation, and entertaining. These include linen, games, cameras, records, liquor, etc. Each of these oddly shaped items must be accommodated in the least amount of space.

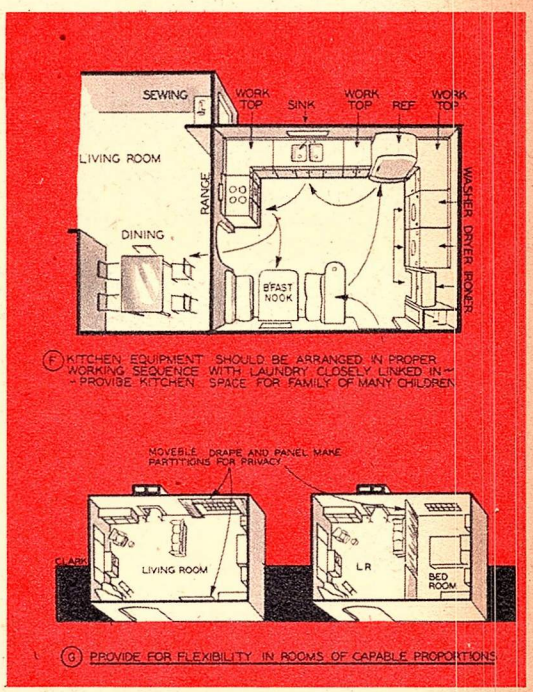
(F) Work Spaces

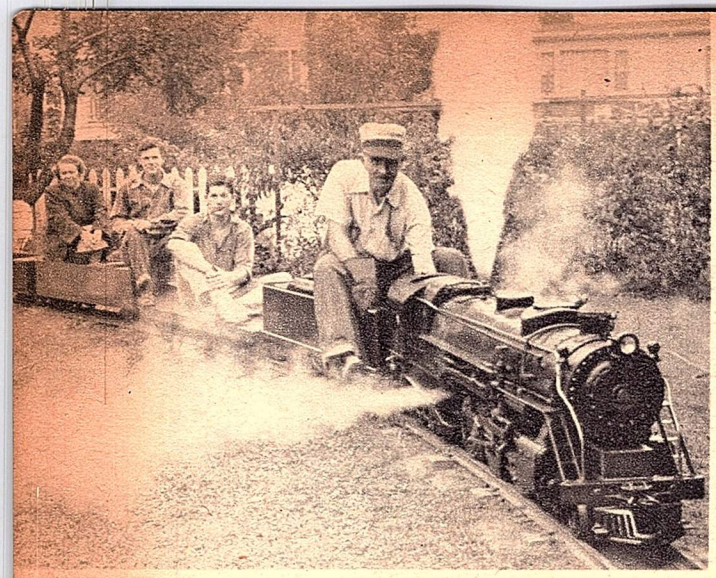
In the interests of efficiency, the kitchen laundry has often become too small, making it impossible to accommodate more than one person comfortably. The possibility of eating in the kitchen should be considered.

It is very important that the equipment be arranged in proper sequence for efficient, step-saving operation. The food storage should be near the service door, the sink or food preparation centrally located between storage and range, and the range convenient to sink and dining area.

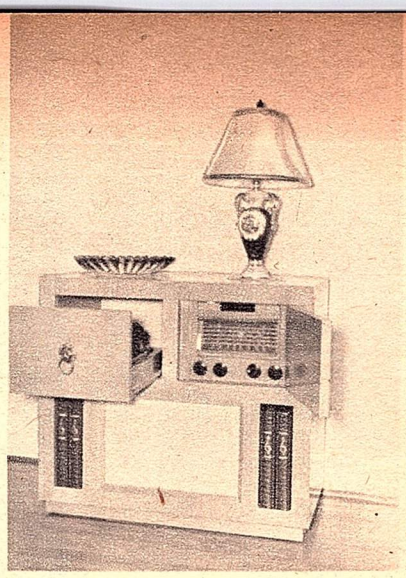
(G) Flexibility

In a small house flexibility enables us to use certain spaces for two or more purposes; space may increase or decrease, as the occasion demands. There are several commercial soundproof, movable partitions which can turn two small children's rooms into a good-sized playroom in a few seconds. These may also be used to screen off the dining area while the table is being set or cleared. •





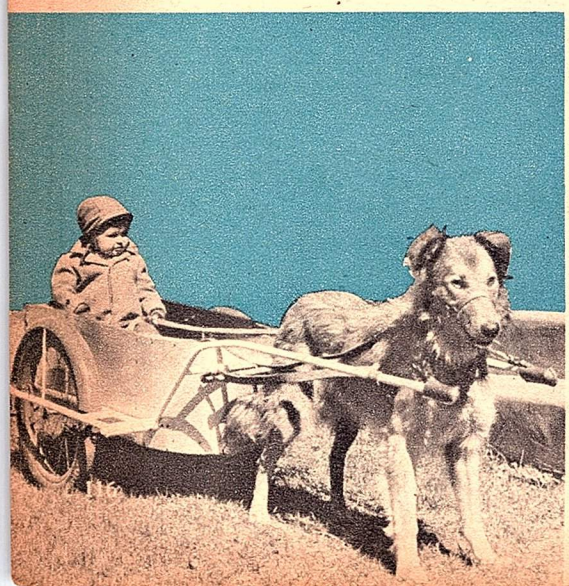
Live steamer, built by Leonard Archer of Chicago, has three gondolas, a flatcar and a bright red caboose. It is built to a scale of 1½ in. per foot and it is powerful enough to pull four or five adults.



Radio-phonograph combination occupies a prominent position in the living room of its builder, C. A. Miller of Edmonton, Canada. The entire cabinet is covered with ¼-in. birch plywood on a maple frame.

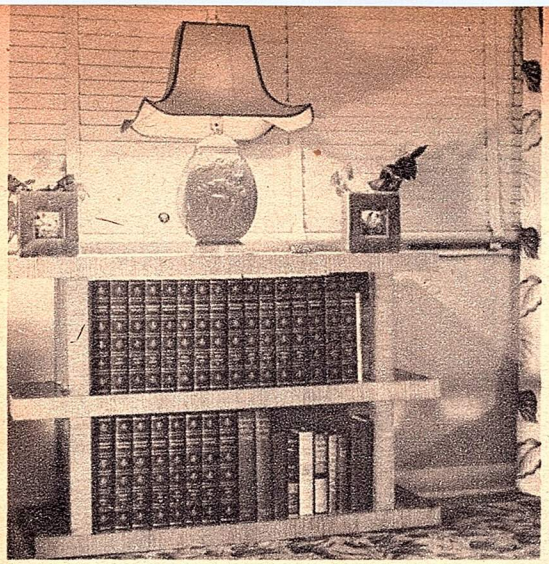
WORKBENCH AWARD WINNERS

Dog cart built with individual coil spring suspension and 20-in. bicycle wheels yields a soft ride. Its builder, Robert Fye of Seymour, Ind., used electric conduit for the frame and covered it with sheet aluminum.

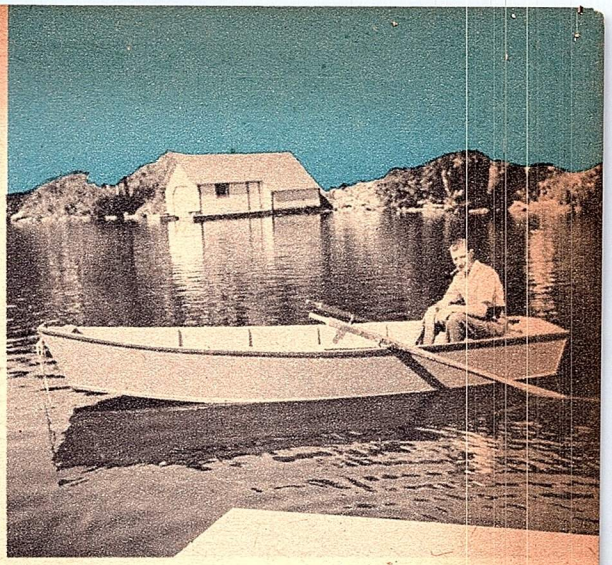


Console combination includes a six-tube radio, a three-speed record changer, room for records, knickknacks and space for TV. Verl Cutler of Claremont, S. Dak. has recently added a matching oak coffee table.





Smart bookcase constructed by Mrs. L. C. Jones, Jr., of St. Petersburg, Fla., is trimmed with 2-in. strips of Weldtex plywood on ⅜-in. plywood. Mrs. Jones likes to do woodworking, while her husband bakes.

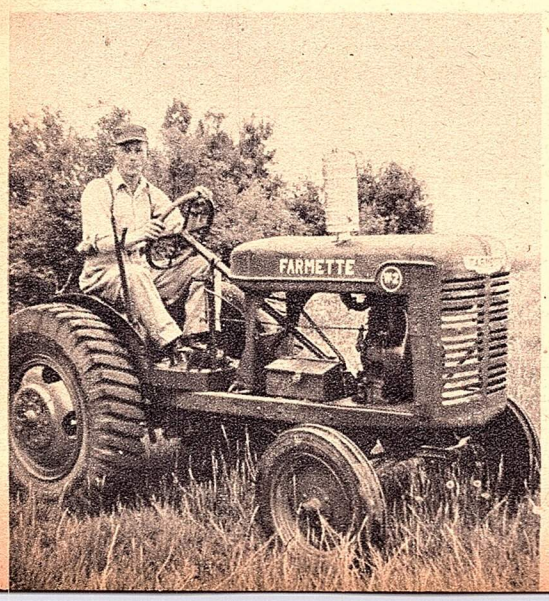


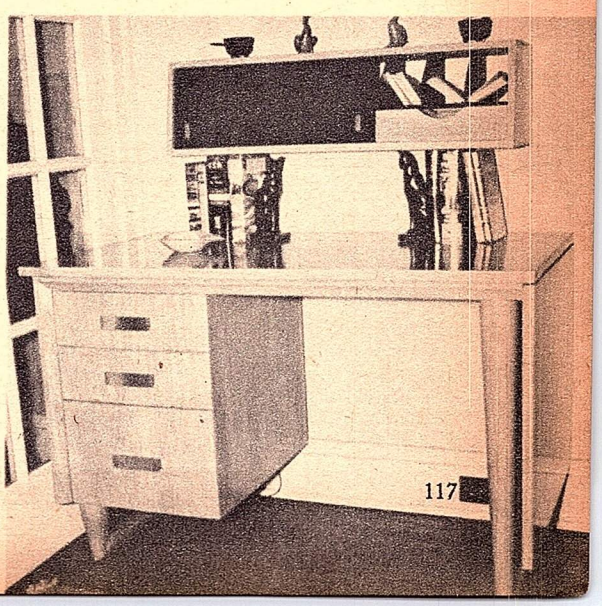
Chum, built from MI plan No. B-187 took Charles Clarke of Montreal, Canada, 48 hours to build including painting. The side and bottom are built of ⅜-in. plywood and the frames are of pine and spruce.

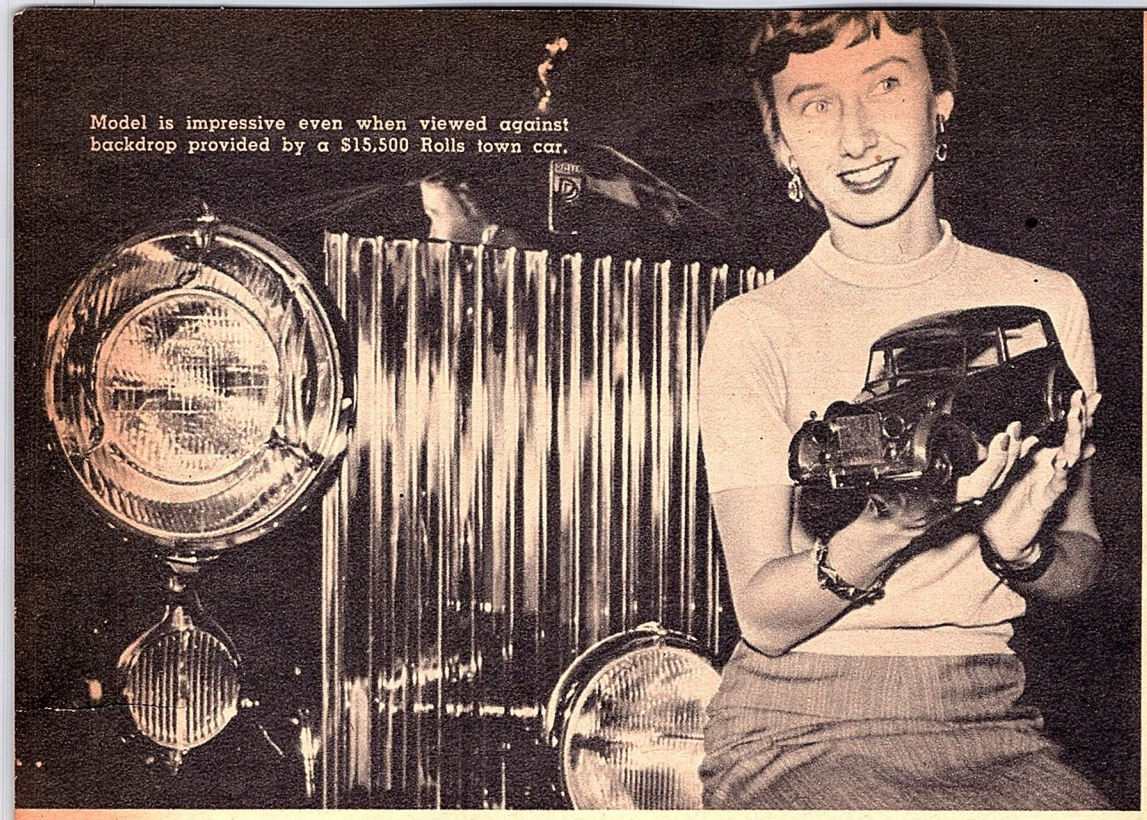
Each craftsman whose project is shown here receives a $5 check and a Workbench Award Certificate. How about sending us a photo and description of your latest project? If you aren't a winner, you may still receive a Certificate Of Merit. Photographs of your workshop are also eligible for an award. Send entries to *Mechanix Illustrated* Workbench Awards, 67 West 44th Street, New York 18, New York.

Farm tractor has two transmissions which give it a range of speeds from one to eighteen mph. Edgar Leidahl of Gladmar, Canada, used a Briggs & Stratton 7-hp engine and some automobile parts for body.

Modern desk built by Peter Pellegrino of Drexel Hill, Pa., incorporates a limed oak desk with the matching drawer and pigeonholes for books and stationery. The drop leaf on the right adds a wide working space.







Model is impressive even when viewed against backdrop provided by a $15,500 Rolls town car.

Miniature Rolls Royce

This royal Rolls, a detailed facsimile of Princess Elizabeth's $30,000 car, makes an eye-catching show piece or running model.

By Harold Pratley

THE internationally famous Rolls Royce Phantom IV model illustrated is an exact replica of the original—down to the paint job. Every feature has been duplicated in this carefully detailed job, which is $\frac{1}{16}$th the size of Princess Elizabeth's own limousine. If you want the finished model for display only, you may want to use hardwood. However, substitute balsa if you expect the car to run smoothly.

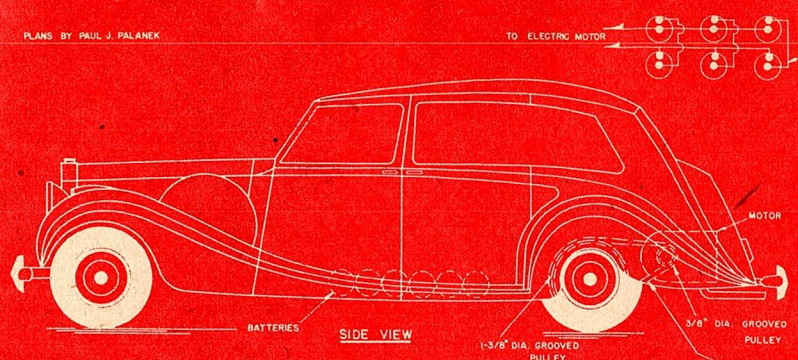
You'll notice from the diagrams that the construction has been broken down into operations and that each part is numbered. Study the drawings carefully and identify the parts and their position in the assembly before beginning to build.

Start with the brass chassis. Frame side rails and cross members (parts 154/1 and 154/2 to 5) are assembled with solder. Work on a flat smooth surface like plate glass. Frequent checking will facilitate later operations.

Parts of the front suspension (154/3, 10, 11, 12 and 13) should be attached carefully in order to obtain uniform assemblies. The wheels may be brass if you want to chrome-plate them but wooden ones may be used and later painted silver. Adjust suspension to stand the frame at the correct height from your working surface, and level. Lightly solder joints to prevent movement.

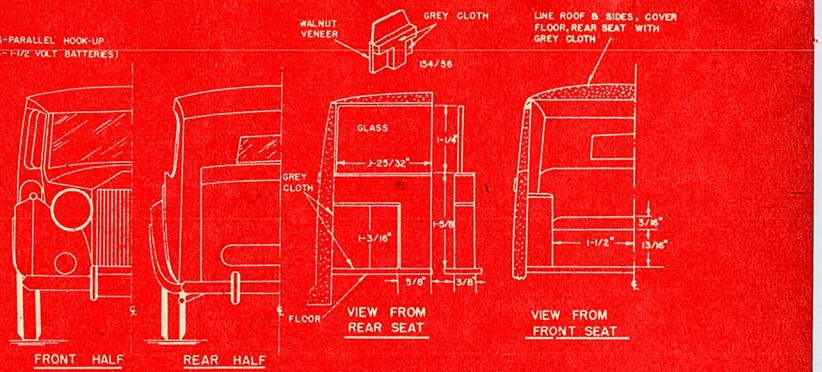
The body is built up from the floor (154/21) of the car. You'll find it easier to align if you bolt the floor to a batten, which must be square, and of such a thick-

PLANS BY PAUL J. PALANEK



SIDE VIEW

TOP VIEW

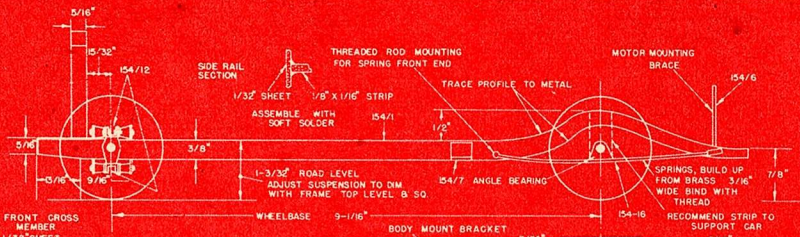


FRONT HALF

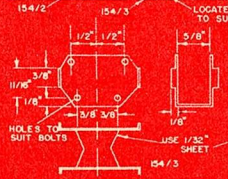
REAR HALF

VIEW FROM REAR SEAT

VIEW FROM FRONT SEAT

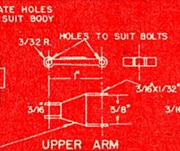


CHASSIS LAYOUT



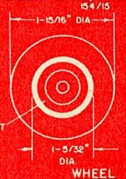
FRONT SUSPENSION

ALL CHASSIS PARTS ARE OF BRASS UNLESS OTHERWISE STATED

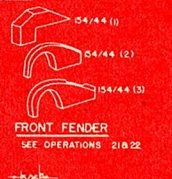


UPPER ARM

LOWER ARM
154/11



WHEEL
154/14
CHROME PLATE & POLISH WHEEL, PAINT WHERE SHOWN TAP TO SUIT BOLT USED
PAINT WOODEN TIRE BLACK OR USE RUBBER RING



FRONT FENDER
SEE OPERATIONS 218-22

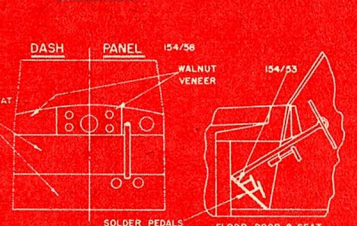


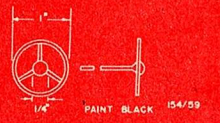
DOOR HANDLE



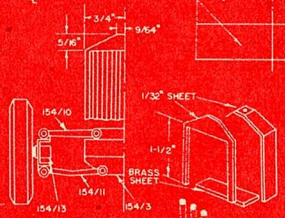
FORK

FRONT WHEEL BEARING



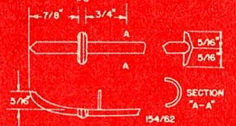


STEERING WHEEL

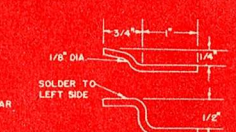




RADIATOR PLATE & POLISH



REAR BUMPER



FRONT BUMPER

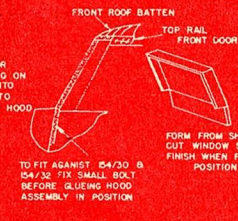


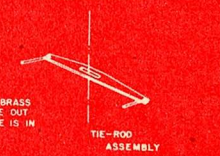
HEAD LAMP
BRASS, CHROME PLATE





FOG LAMP





NOTE
ALL METAL PARTS CAN BE MADE FROM, ALUMINUM, BRASS OR STEEL, OR A COMBINATION OF ALL THREE. SILVER PAINT CAN SUBSTITUTE FOR CHROME PLATE.

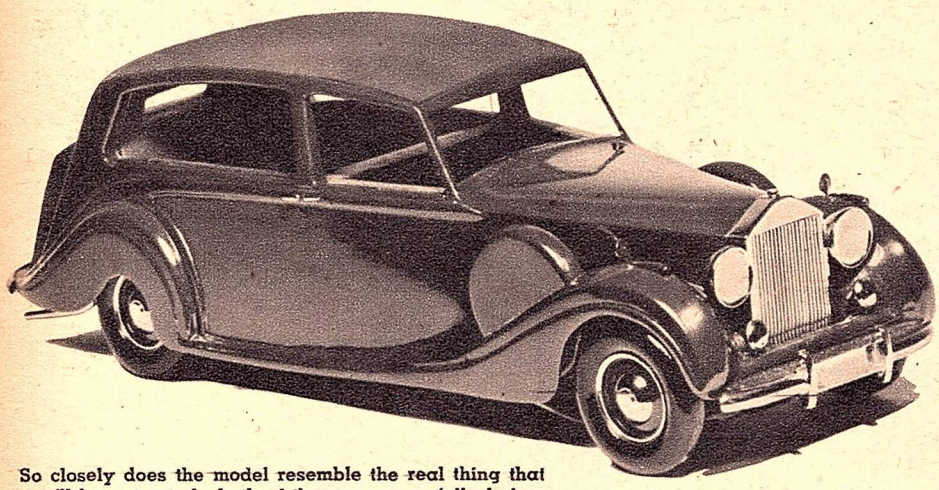
ness as to set the top of the floor at the correct height from your working surface, namely $1\frac{9}{32}$ in. Bolt with nuts at the top of the floor, so that the batten may be removed at a later stage in construction. The division bulkhead (154/22) and support block, together with the rear seat and arm rest units are now fitted (154/24 to 27). This phase of the construction is shown in the diagram on page 121. Sand all parts smooth before gluing. Moving toward the front end, affix the bulkhead front and top, and the sloping foot board (154/28 to 30).

The scuttle sides and top (154/31, 32) are now fitted. Each part glued should be allowed to dry before fitting another. Fashion a template for checking the angle made by the *inside* of the doors and floor. This angle is uniform throughout the body. Cut the rear quarter blanks to size in top and slope, leaving the lower edge a little oversize for trimming later. Pin these parts (154/33) in position, glue, and set aside. Cut the rear and front doors (154/34-5), again leaving lower edges oversize.

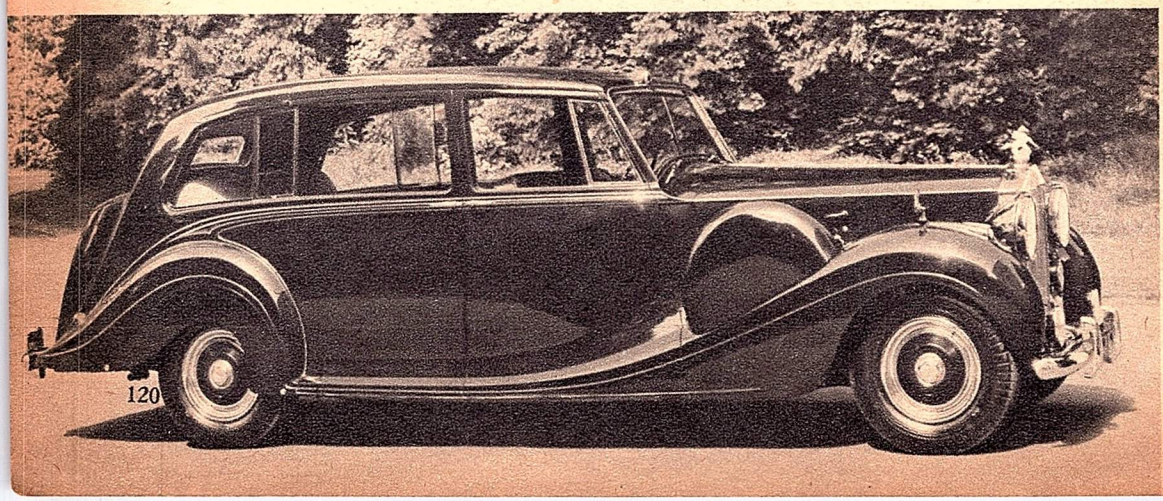
Now construct templates for the curve of the body (operations 13 and 14). Note that these plates rest on your working surface. By using a block of known width, you can work the template toward the batten until the correct body width is obtained. Shape with a sharp ¾-in. chisel, then sand down with 000 paper.

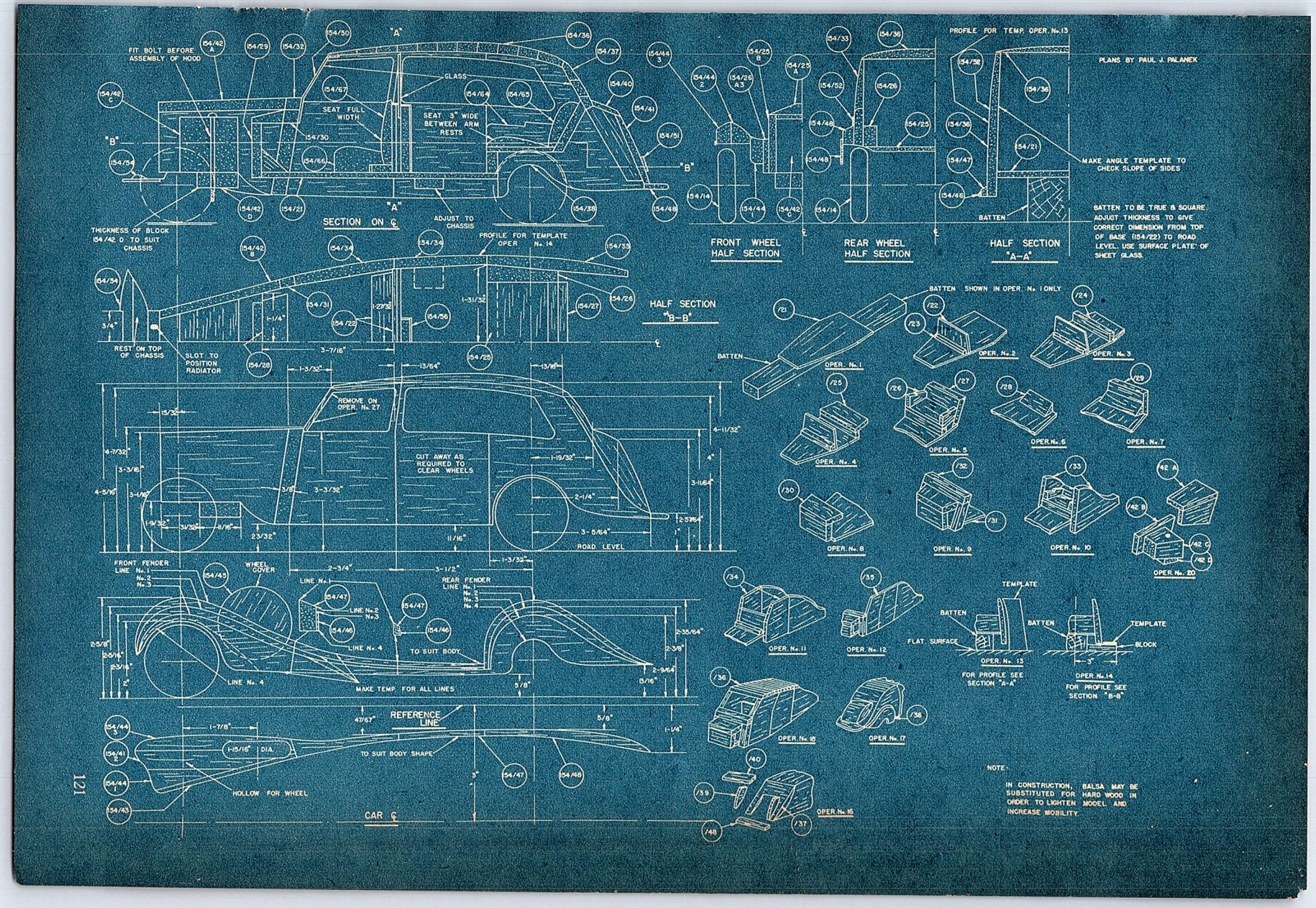
The roof (154/36) can be either built up from a number of battens or cut from a piece of solid balsa. Glue in place and sand smooth. The rear panel and luggage compartment (154/37, 39, 40, 41) together with the rear bumper platform (154/49) are now made and glued in position (operation 16). Rear fenders (154/38) are cut so that the arch clears the tires (operation 17).

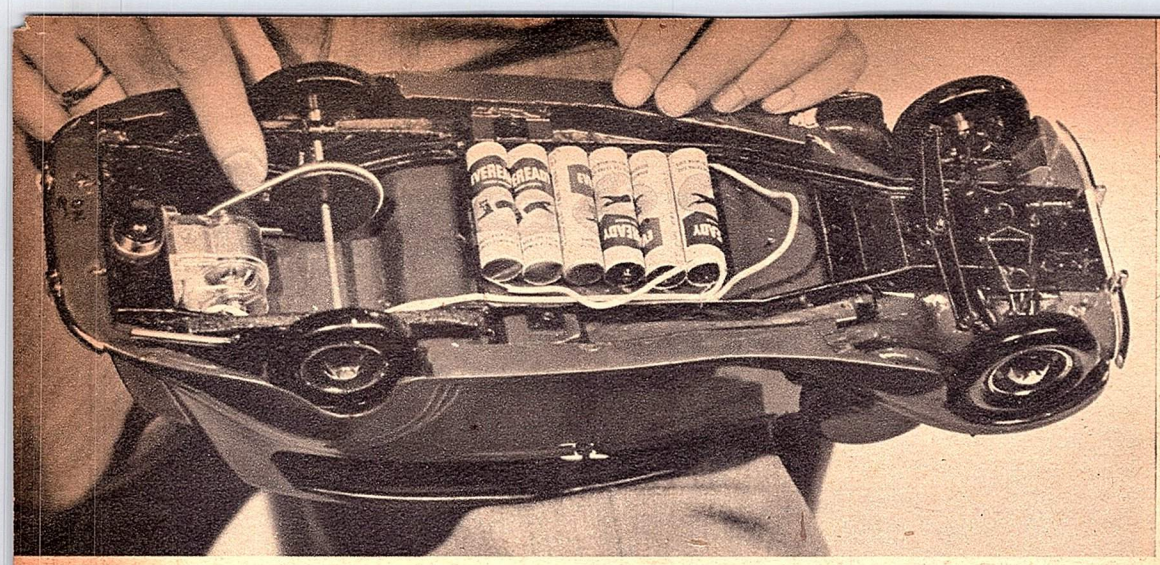
You are now ready to cut all the window recesses except the front edge of the front-door window, which is later cut right



So closely does the model resemble the real thing that you'll have to study both of these cars carefully before deciding which is which. Only the omission of the side windows in the model, shown above, gives it away.




FIT BOLT BEFORE ASSEMBLY OF HOOD
GLASS
SEAT FULL WIDTH
SEAT 3" WIDE BETWEEN ARM RESTS
SECTION ON ℄
ADJUST TO CHASSIS
THICKNESS OF BLOCK 154/42 D TO SUIT CHASSIS
FRONT WHEEL HALF SECTION
REAR WHEEL HALF SECTION
HALF SECTION "A-A"
PROFILE FOR TEMP. OPER. No. 13
PLANS BY PAUL J. PALANEK
MAKE ANGLE TEMPLATE TO CHECK SLOPE OF SIDES
BATTEN TO BE TRUE & SQUARE ADJUST THICKNESS TO GIVE CORRECT DIMENSION FROM TOP OF BASE (154/22) TO ROAD LEVEL. USE SURFACE PLATE OF SHEET GLASS.
PROFILE FOR TEMPLATE OPER No. 14
REST ON TOP OF CHASSIS
SLOT TO POSITION RADIATOR
HALF SECTION "B-B"
BATTEN SHOWN IN OPER. No. 1 ONLY
OPER. No. 1
OPER. No. 2
OPER. No. 3
OPER. No. 4
OPER. No. 5
OPER. No. 6
OPER. No. 7
OPER. No. 8
OPER. No. 9
OPER. No. 10
OPER No. 20
REMOVE ON OPER. No. 27
CUT AWAY AS REQUIRED TO CLEAR WHEELS
ROAD LEVEL
FRONT FENDER LINE No. 1 No. 2 No. 3
WHEEL COVER
REAR FENDER LINE No. 1 No. 2 No. 3 No. 4
LINE No. 1
LINE No. 2 No. 3
LINE No. 4
TO SUIT BODY
MAKE TEMP. FOR ALL LINES
OPER. No. 11
OPER. No. 12
OPER. No. 13
FOR PROFILE SEE SECTION "A-A"
OPER. No. 14
FOR PROFILE SEE SECTION "B-B"
TEMPLATE
BATTEN
FLAT SURFACE
BLOCK
OPER. No. 15
OPER. No. 17
OPER. No. 16
REFERENCE LINE
TO SUIT BODY SHAPE
HOLLOW FOR WHEEL
CAR ℄
NOTE:
IN CONSTRUCTION, BALSA MAY BE SUBSTITUTED FOR HARD WOOD IN ORDER TO LIGHTEN MODEL AND INCREASE MOBILITY.



Power is supplied by six Eveready AA cells connected to Motoy motor.

out when fitting the windshield frame.

Unbolt the body from the batten, removing nuts through windows. Mount the body on the chassis and align it properly. If required, fit an appropriate furring strip under the body on either the mounting angles or on cross members. Attach with three wood screws. Check if tightening these screws lifts any of the wheels off your working surface, which may happen since the body is more rigid than the frame.

The hood and front end are built as a unit and fitted to the body when all blanks are glued. Start with the hood sides (parts 154/42B and 154/42C). Adjust the thickness of block 154/42D to bring the top line of the hood side of the correct height. Drill through and fit a bolt before gluing on the hood top (154/42A). Plywood wing mounts are glued to the hood sides.

Front fenders are made in three sections. Make the inner block (154/44-1) first. Cut to clear suspension. The wheel arch in the center blank is then cut and parts are pinned in position. Glue inner and center blanks. It is well to leave the outside one a little large rather than cutting down to line 1, as indicated in the sketch on page 121. Cut slots for both spare tire covers in the center blanks, and cut the wheel arch in the outer blank. Slot it for its spare tire cover. After gluing, position against the fender mount and, using a template, cut to line 1. Drill through the inner blank and fasten with a wood screw into the fender mount and hood side. Use a smaller screw at the rear of the hood, passing it through the hood from the inside.

The running boards (154/47) are cut to conform to the body. Sand and glue. Mark line 2 on the running board and chamfer, blending it in a smooth line with the front fender.

Cut the side molding (154/48) to shape, and glue on. Carefully remove the pillars at the front edge of the front door windows, leaving top rail intact. Replace this part with $\frac{1}{32}$-in. sheet brass (154/50). Cut out the window space roughly, then set flange to the angle made by the scuttle side (154/31) and windshield frame.

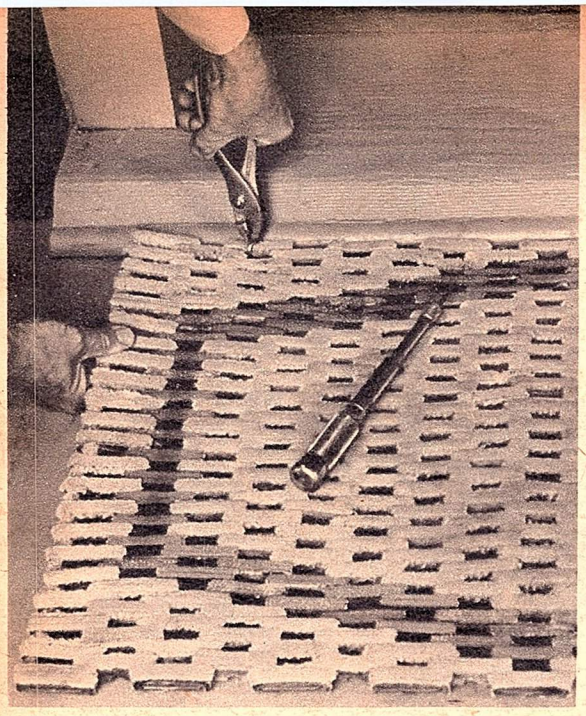
Drill a hole through top of the scuttle (after removing the hood assembly) for a small bolt, spring the windshield frame into position by passing it through the window and moving the top forward, having placed the flange in the approximately correct position. Glue and bolt. When dry, trim window shapes to size and remove burrs. Make a pattern for glass and cut to size. Cut the rear plate mount (154/51) and glue it on.

Make tracings of the door and body side moldings (154/52), cut and glue. Drill holes for the door handles (154/47).

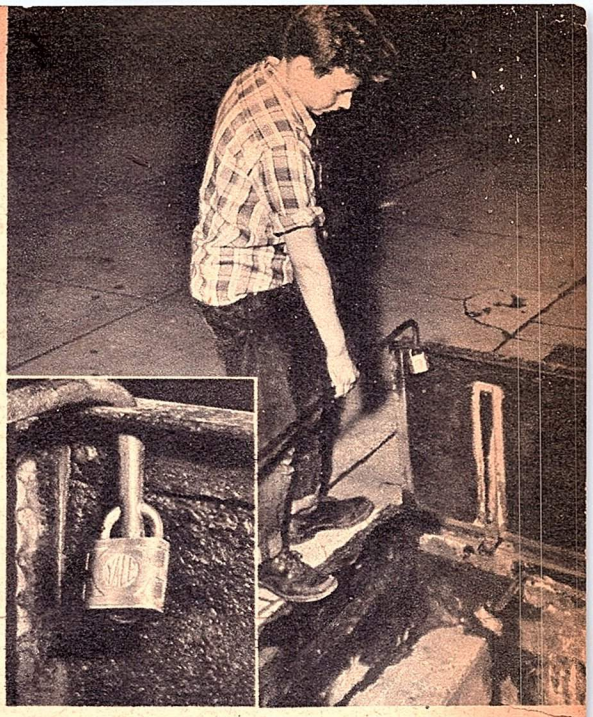
The front hood assembly can now be glued to the body. Use small countersunk wood screws. Fit the radiator to the chassis, and adjust its height by strips between the radiator base and the cross member. Cut the front fairing (154/54) from $\frac{1}{16}$-in. veneer, and glue. Fashion D-shaped cross [*Continued on page* 164]

FULL-SIZE PLANS

will greatly simplify construction. Send fifty cents to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Conn. Please specify Plan No. 433.



Anchor your door mat by inserting a pair of L-shaped curtain rod hooks inside the rear edge link. Screw hooks as indicated for a tight grip. To remove mat, turn hooks away from threshold and lift.



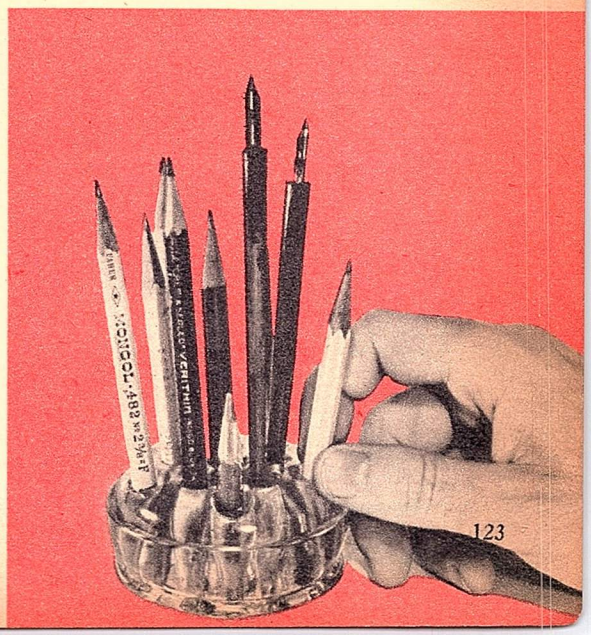
Cellar doors of the type illustrated can be a real menace if not properly braced. Slip the padlock ordinarily used to lock the doors through a hole drilled in the free end of your bar. Keeps lock handy, too.

Tested Tips

Snow adhering to your shovel makes a tough job even more difficult. Solve this problem by applying some Simoniz and rubbing it down as you would on your car. Snow will slide off freely.



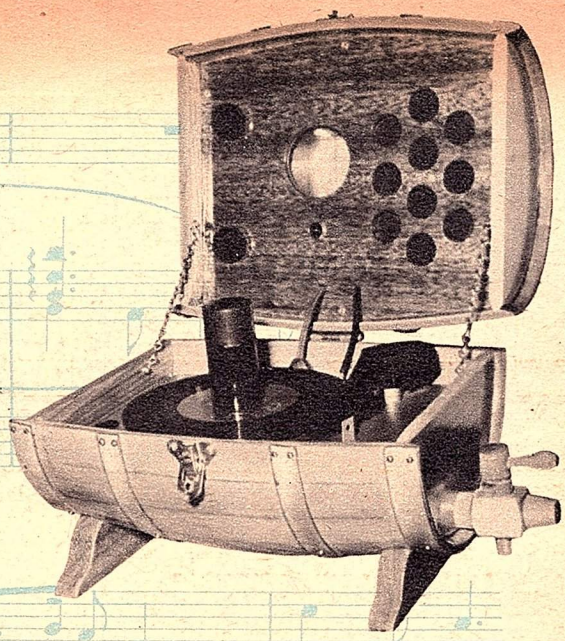
A glass "frog" used to hold flowers in a bowl serves as a convenient repository for miscellaneous pencils and pens on your desk. Cut a cardboard disk to size and cement to bottom to provide a surface.



The recreation room in your home will be enhanced by this out of the ordinary, record changer cabinet.

By Loren Collins

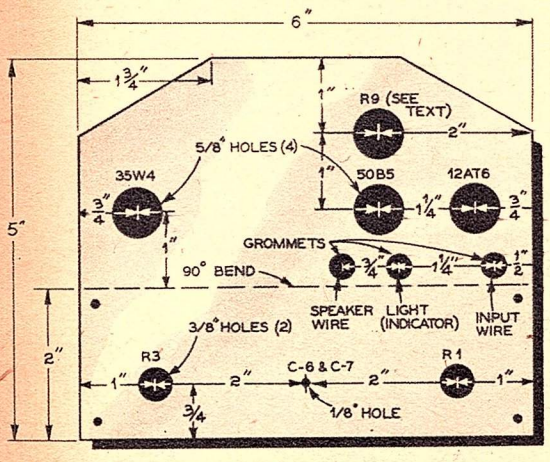




ROLL NOT THE BARREL

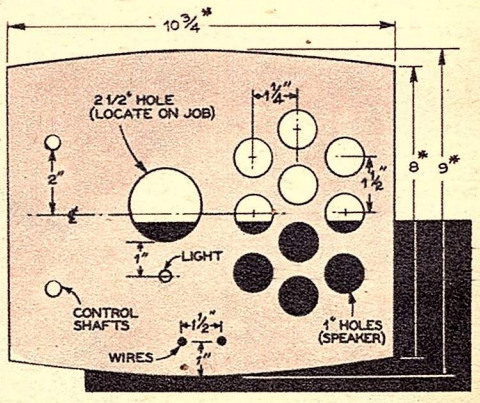
THIS is an unusual project requiring a minimum of material and only the simplest hand tools. When completed it will not only be an attractive addition to your den or rumpus room but a serviceable record player, rivaling many large consoles in tonal quality. Using the unbreakable 45 rpm 7-in. disks that come in a wide choice of classical and popular selections, it will play ten selections, or from 30 to 50 minutes of music with one loading.

The keg used is a 2½-gallon size, measuring 12½ in. long by 9 in. across. Any cooperage should be able to supply you, or they can be obtained from ship supply concerns. The changer mechanism is handled by radio stores throughout the country and is [*Continued on page* 164]

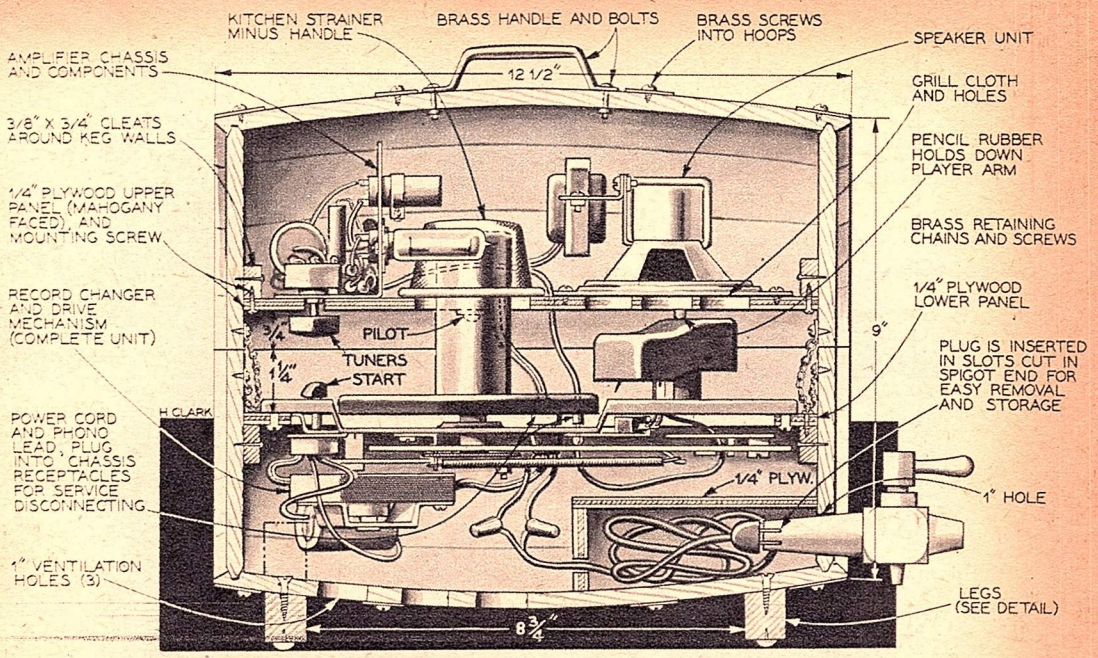


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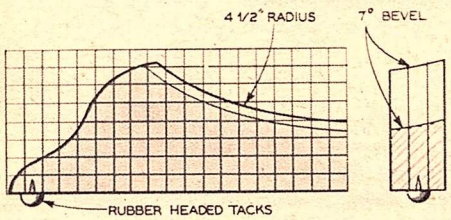
CHASSIS LAYOUT AND PARTS PLACEMENT



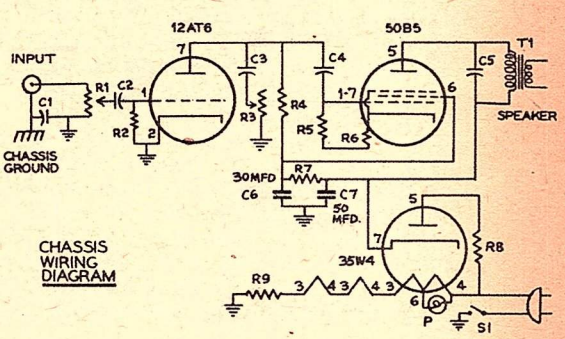
LAYOUT OF UPPER PANEL *APPROX. DIMENSIONS



CROSS SECTION SHOWS ARRANGEMENT OF UNITS INSIDE BARREL

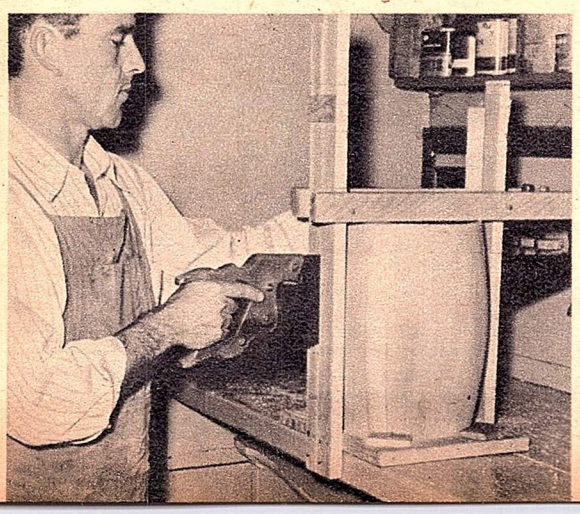


CRADLE LEG PROFILE ON 1/4" SQUARES

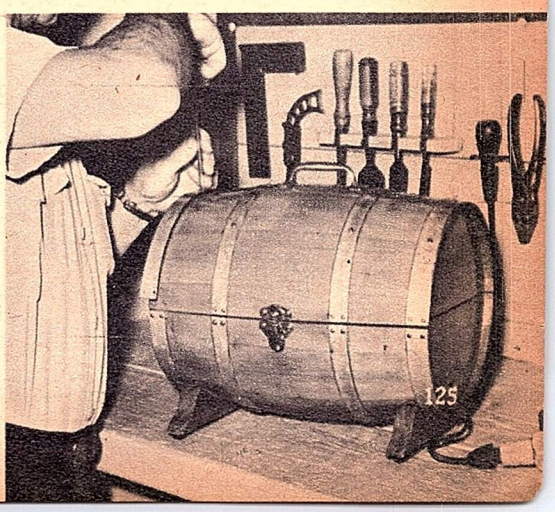


CHASSIS WIRING DIAGRAM

The barrel should be sawed in half after it has been glued together. A special frame should be constructed around the barrel for this job.



The final hardware is installed after the rest of the work is finished. Note how the power cord comes out of the slot in the spigot's receptacle.





car care

Safe Winter Driving

By Frederick C. Russell

A new kind of "skid row," developed at the skid capitol of America, looks like a life-saver for millions of winter drivers. It has completely taken the guesswork out of winter safety—or, more accurately, the kidding out of skidding.

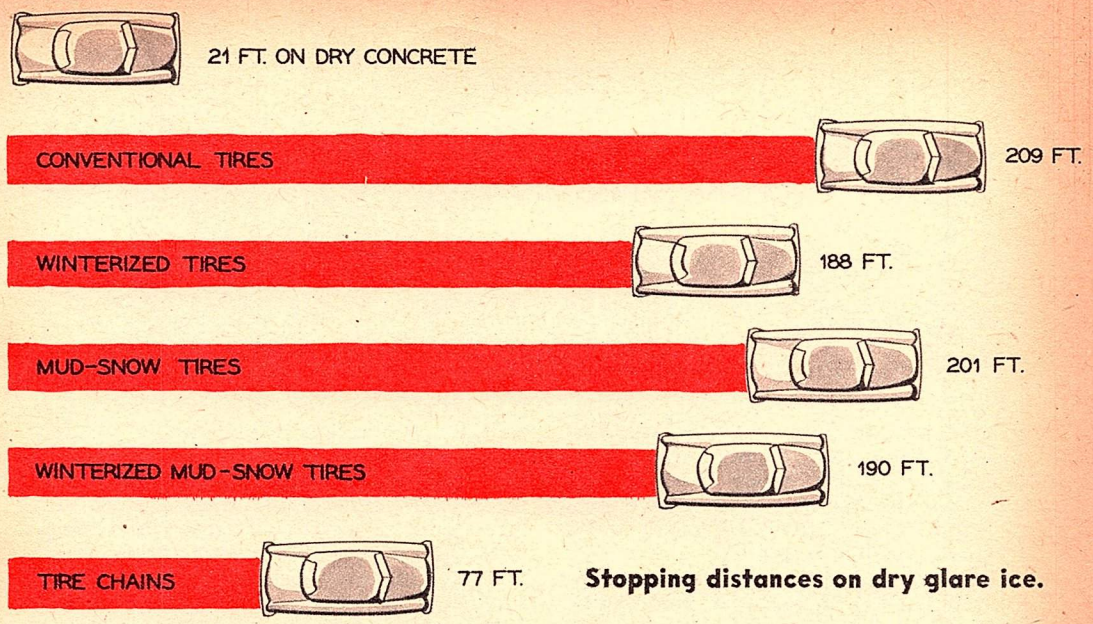
Completely deflated on the ice covered Pine Lake of Clintonville, Wisconsin, are many of the advertising claims regarding the virtues of anti-skid tires, the ballyhoo about traction and the assortment of tips from other drivers. Here the National Safety Council, through its Committee on Winter Driving Hazards, has gone straight to the heart of those problems that concern everyone who drives on snow and ice. Its conclusions will give you quite a jolt.

Would you suspect, for instance, that those mud-snow tires on which we've been pinning so much faith actually reduce stopping distances an average of only 13 per cent as compared to natural rubber tires? If these treads are given a special winterizing the figure is raised to 17 per cent. But here is the shocker: *plain winterized tires average only a 5 per cent improvement over conventional tread natural rubber tires.* These figures cover both





At right Prof. Ralph Moyer of the University of California, chairman of the Committee on Winter Driving, records the length of a skid on glare ice. Man holding tape is Lyman Daniels, star test driver for General Motors. In center is Prof. Arch Easton, of University of Wisconsin. Photo above shows test crew making a change from natural rubber tires, used as a control, to the more slippery synthetics.



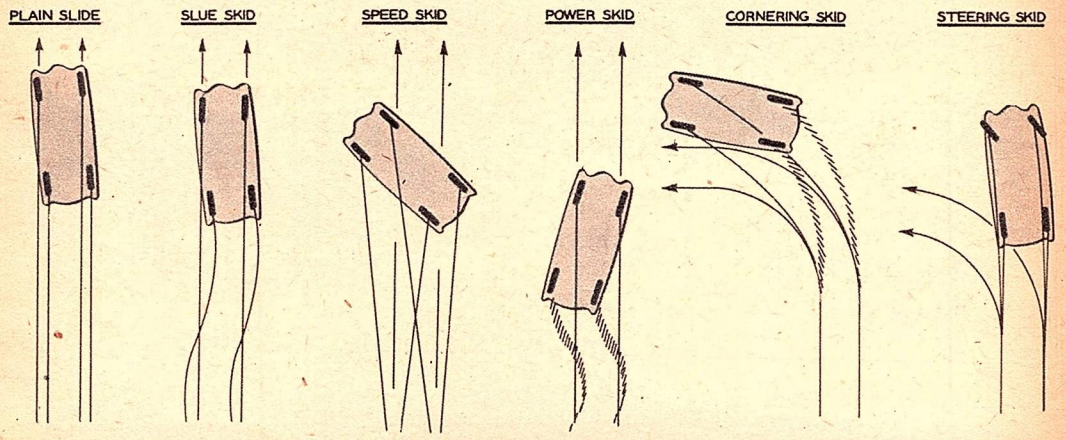
Stopping distances on dry glare ice.

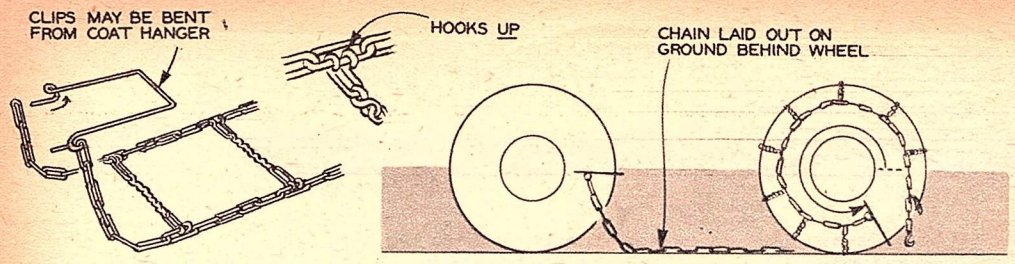
stopping and traction, indicating that most of the gain assumed by users has been largely mental.

Another surprise is the fact that tests demonstrated that natural rubber is 10 to 50 per cent superior to synthetic rubber for stopping as well as for traction on both snow and ice. Synthetics do about 7 per cent better than natural rubber in the matter of cornering on ice, as I'll bring out presently when we get into the excitement of side slip. But right now it will be enough to learn that the widely featured winterized tires actually may be inferior to natural rubber tires in traction ability, with only a 5 per cent advantage in stopping ability.

So you may be s'kidding yourself in a big way by thinking that the salt, peanut shells, sawdust, steel wool, chips and steel coils embedded in the tire tread is going to give you a nice safe stop regardless of speed or road conditions.

The committee of 33 directors, managers and engineers representing states, cities, associations and companies vitally concerned with winter safety awheel used primary control tires for evaluating the various tires and for giving them a numerical rating. These control tires were conventional rib-type treads made of natural rubber. Using a baseline of 100 for comparative purposes it was found that conventional cold synthetics, for performance





CHAIN APPLIER IS NEW TWIST FOR SIMPLE AND QUICK CHAIN INSTALLATION

FORWARD END OF CHAIN IS NOW CLIPPED TO TIRE AND WHEEL IS ROTATED ONE TURN

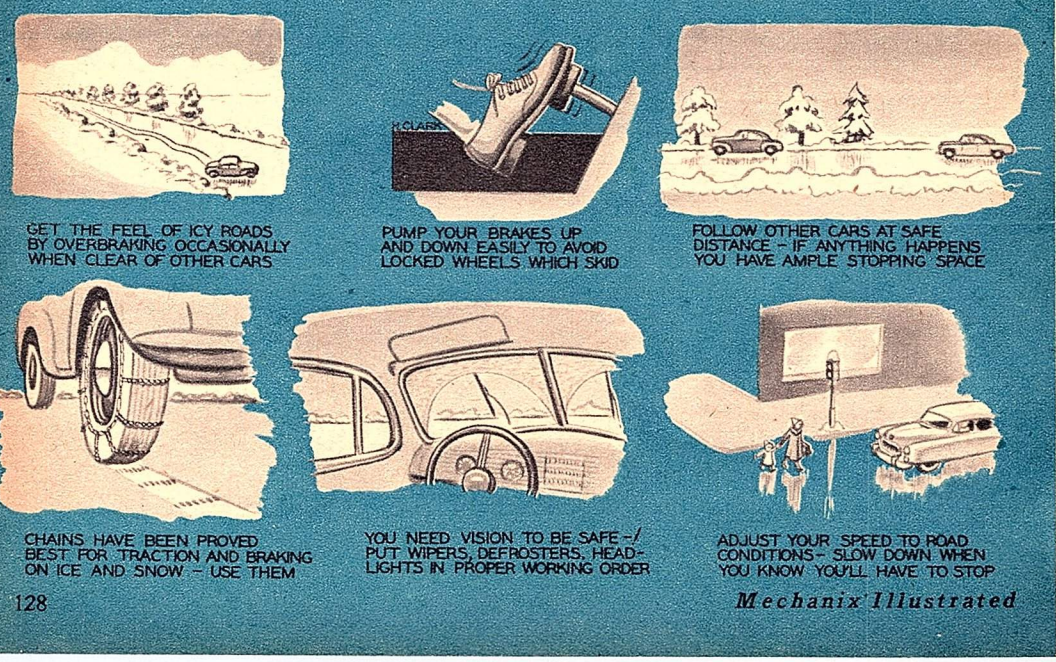
CLIPS BRING CHAIN AROUND FOR EASY REMOVAL OF CLIP, JOINING OF CHAIN ENDS

over all types of winter surfaces, was 89. Winterized tires rated 108, mud-snow tires 113, and winterized mud-snow tires 128. And just as the engineers have believed all along, the rating for conventional tires with chains jumped to 286!

Translated into stopping your hopped-up Stutz Bearcat this means that, whereas it might take you 209 feet to stop from a mere 20 miles per hour on glare ice with conventional tires, 188 with winterized tires, 201 feet with mud-snow treads and 190 feet with winterized mud-snow treads, you could do the job in 77 feet with tire chains. You're driving only 20 mph, remember, not 35 or 40 as you might easily be doing if you failed to note how dangerous the road surface is, or if you placed too much confidence in the special tires bought for the winter season.

In the figures I have just given, the Committee is talking about tires with natural rubber treads. You should thus figure on increasing the skid distances 10 to 50 per cent for synthetics. Cold rubber wears best, skids most. There is, however, a 7 per cent improvement in cornering speed on ice with synthetics but as a rule the driver who is exceeding the tread limit runs into trouble on the straightaway long before he has an opportunity to enjoy any such slight advantage on a slippery curve.

There are six kinds of skids, and you're at the head of the class if you can describe three of them. It's important to know one skid from the other, otherwise how can you check it unless you first identify it? Everyone knows the plain slide which is usually due to applying more braking power than conditions warrant. Especially well-known, and usually most feared, is the slue skid in which the rear end slides to the right or left to overtake the front end unless checked by an immediate cut of the front wheels in the direction the rear wheels are sliding. Speed skidding is well known to those who drive too fast for conditions and who [*Continued on page* 156]



GET THE FEEL OF ICY ROADS BY OVERBRAKING OCCASIONALLY WHEN CLEAR OF OTHER CARS

PUMP YOUR BRAKES UP AND DOWN EASILY TO AVOID LOCKED WHEELS WHICH SKID

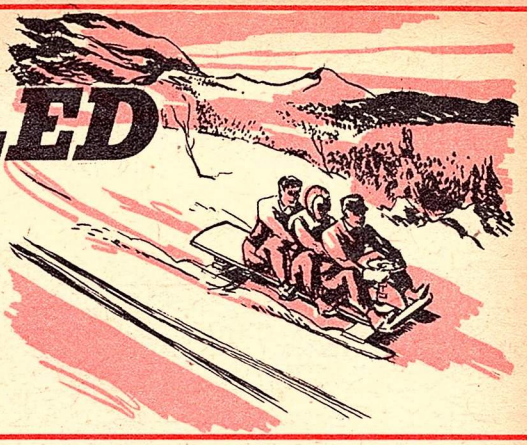
FOLLOW OTHER CARS AT SAFE DISTANCE – IF ANYTHING HAPPENS YOU HAVE AMPLE STOPPING SPACE

CHAINS HAVE BEEN PROVED BEST FOR TRACTION AND BRAKING ON ICE AND SNOW – USE THEM

YOU NEED VISION TO BE SAFE – / PUT WIPERS, DEFROSTERS, HEADLIGHTS IN PROPER WORKING ORDER

ADJUST YOUR SPEED TO ROAD CONDITIONS – SLOW DOWN WHEN YOU KNOW YOU'LL HAVE TO STOP

BOBSLED



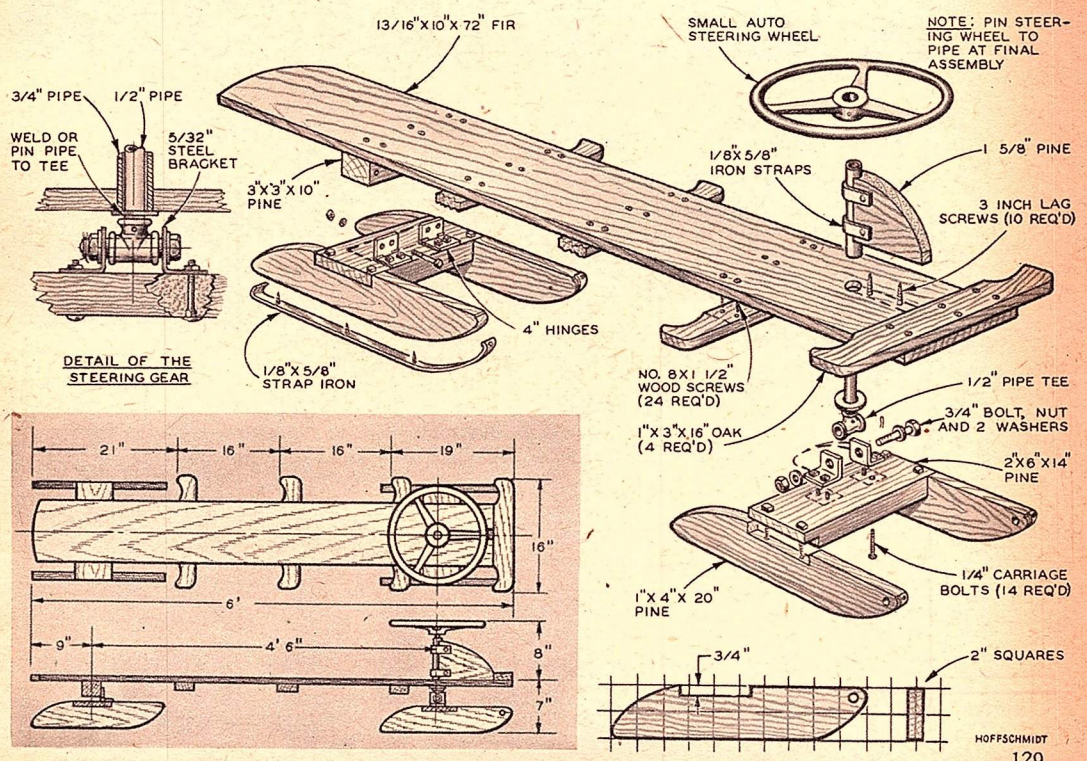
Low center of gravity plus clean lines spell thrills for sportsmen.

BUILD this speedy four-seater coaster with common hand tools. Foot rests are optional; you may prefer the old style of riding with legs supported by the arms of the rider in front of you. The front rest must be retained, of course, to brace the pilot. Pine or fir of the indicated sizes will serve. Round the edges of the plank seat.

Assembly details are shown in the sketch. The front truck is pivoted in a pipe tee and the rear one is mounted on hinges. Strap iron on the runners is secured with countersunk screws. The pipe tee should be very securely fixed to the pipe with either a bolt or taper pin. If you decide to weld it, use black iron pipe, not galvanized.

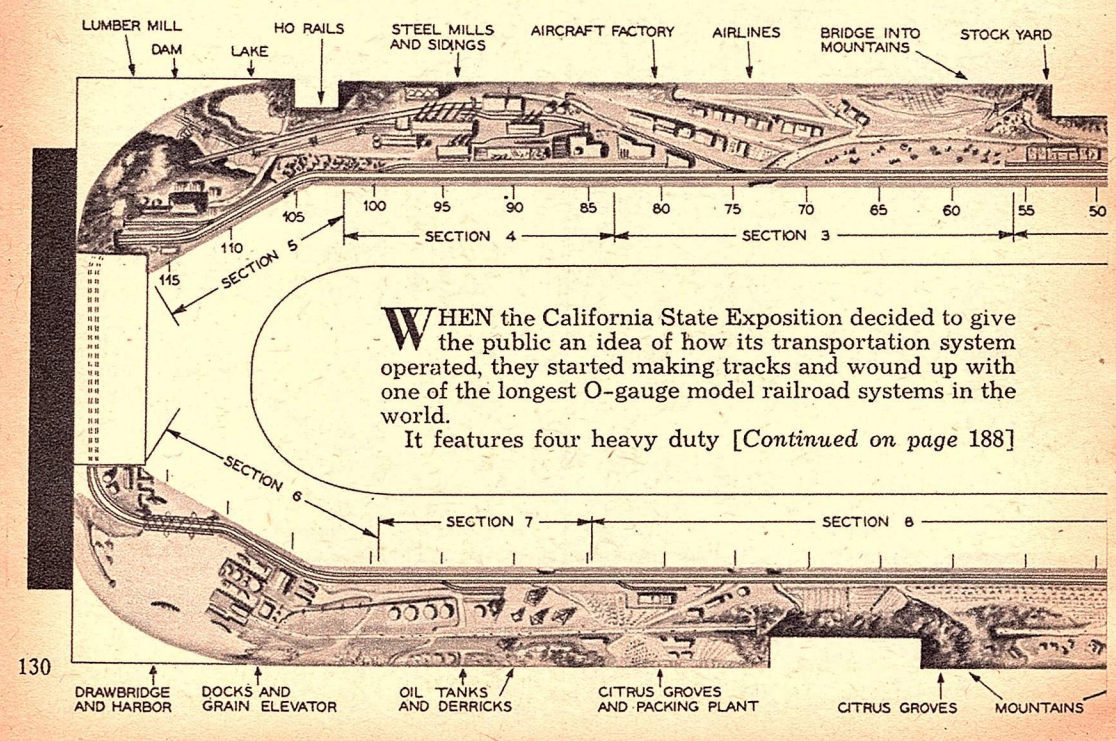
You'll be able to pick up a small steering wheel at most auto graveyards. The average 16-in. job is a bit too awkward for use on this sled.

For a smart finishing job, shellac the trunks naturally, paint all the iron work black, the seat yellow, and the bracket in front of the steering post red.—*Hi Sibley.* •



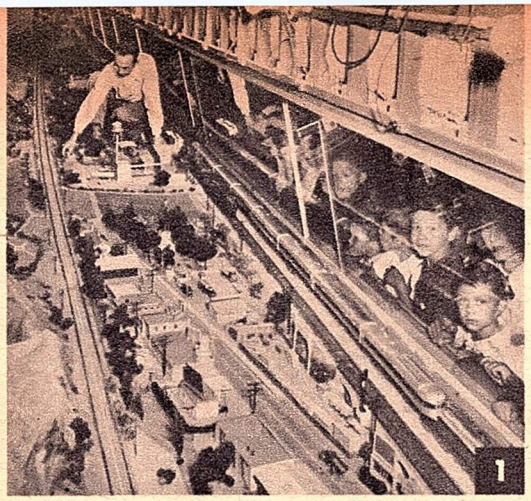
THE MODEL MAKER'S ROUNDHOUSE

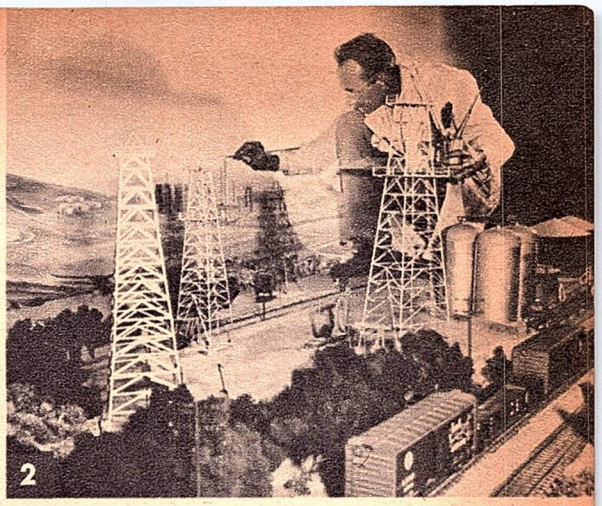
The world's longest model railroad, 800 feet long, wends its way along the balcony of the Industrial Museum in Los Angeles.

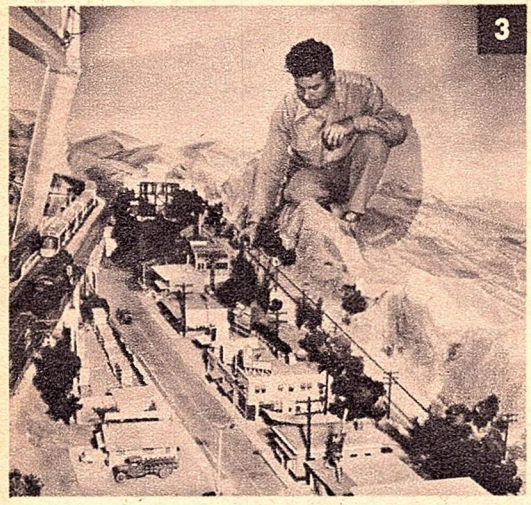


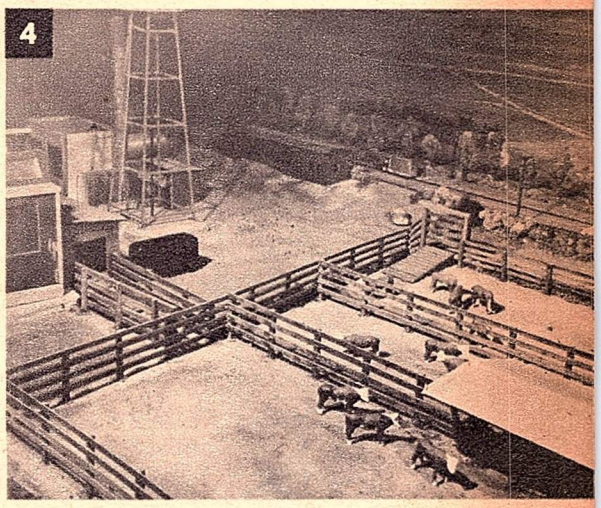
WHEN the California State Exposition decided to give the public an idea of how its transportation system operated, they started making tracks and wound up with one of the longest O-gauge model railroad systems in the world.

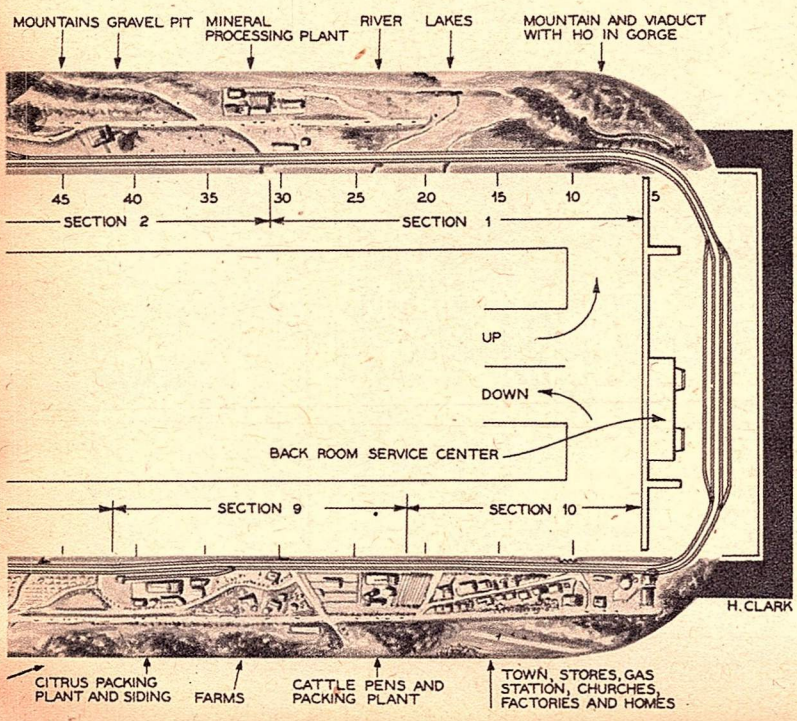
It features four heavy duty [*Continued on page* 188]











1 Note the small fry in the right background who have their attention, for the present, on the photographer instead of the town in the foreground.

2 Gus Rothe, one of the maintenance men, works in a tight spot to paint the background.

3 A member of the crew sets a truck on a section of moving highway. Typical Main Street is shown in foreground.

4 Realism throughout entire layout is exemplified by this closeup of a miniature cattle ranch.

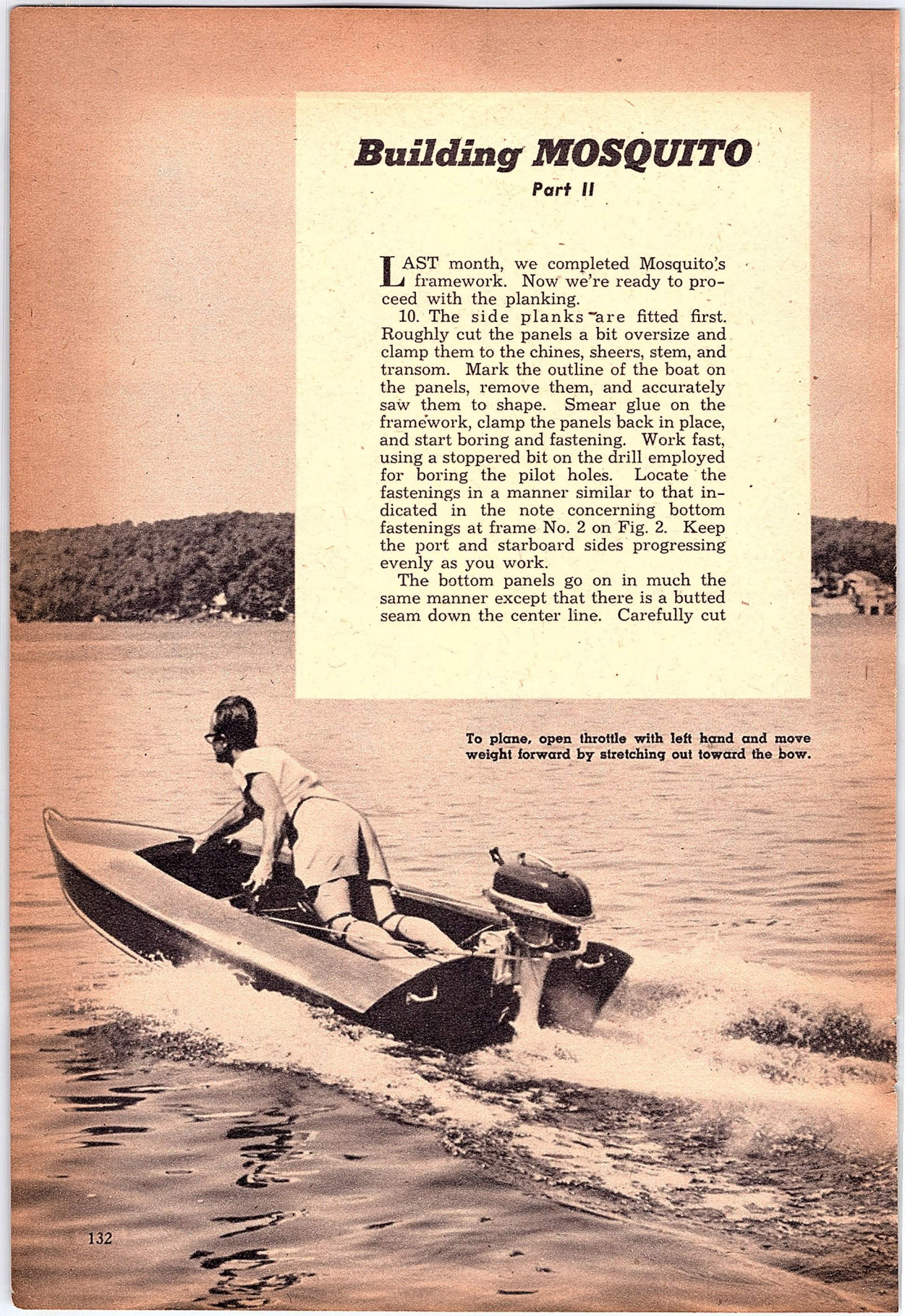
Building MOSQUITO

Part II

LAST month, we completed Mosquito's framework. Now we're ready to proceed with the planking.

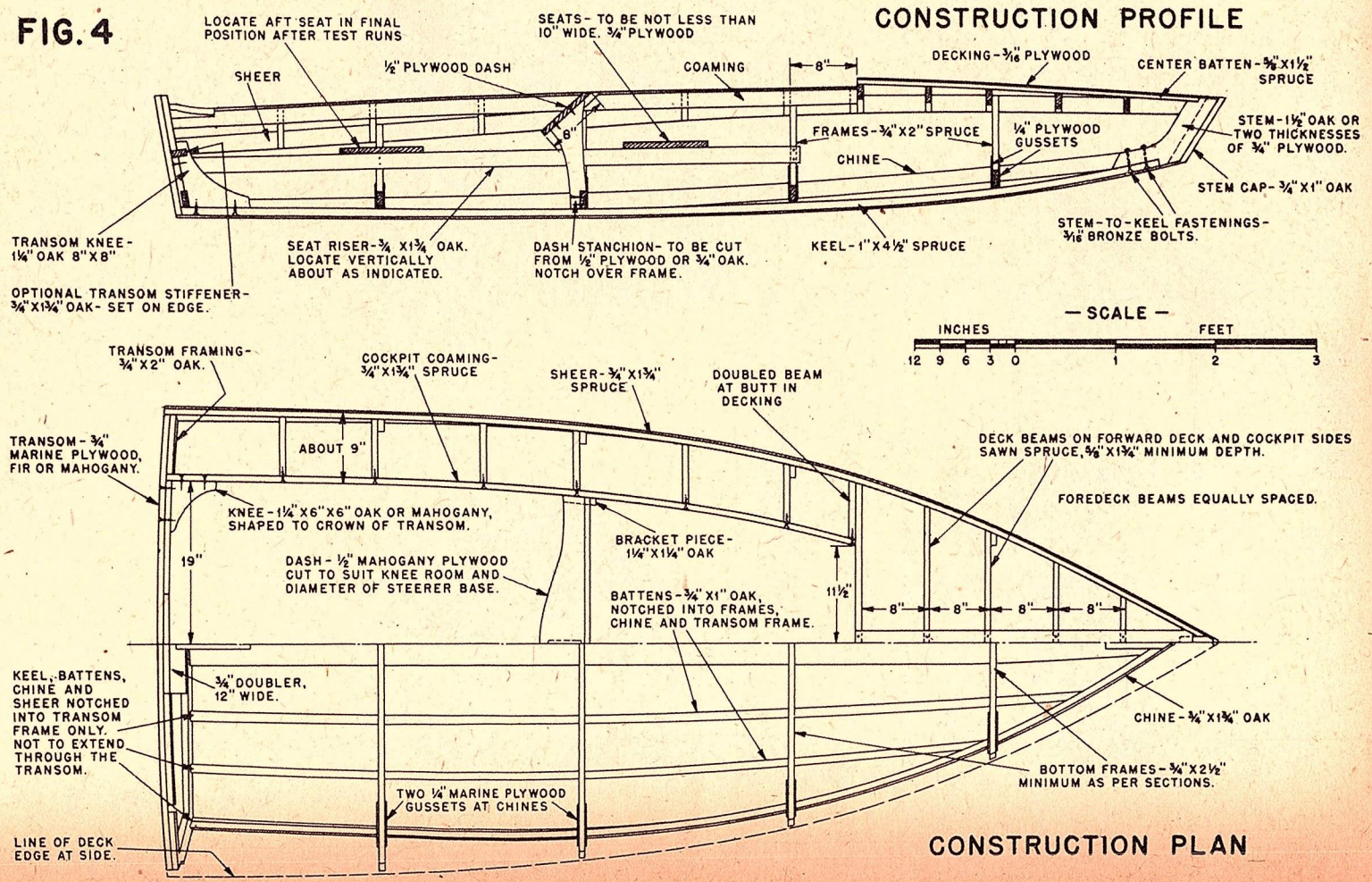
10. The side planks are fitted first. Roughly cut the panels a bit oversize and clamp them to the chines, sheers, stem, and transom. Mark the outline of the boat on the panels, remove them, and accurately saw them to shape. Smear glue on the framework, clamp the panels back in place, and start boring and fastening. Work fast, using a stoppered bit on the drill employed for boring the pilot holes. Locate the fastenings in a manner similar to that indicated in the note concerning bottom fastenings at frame No. 2 on Fig. 2. Keep the port and starboard sides progressing evenly as you work.

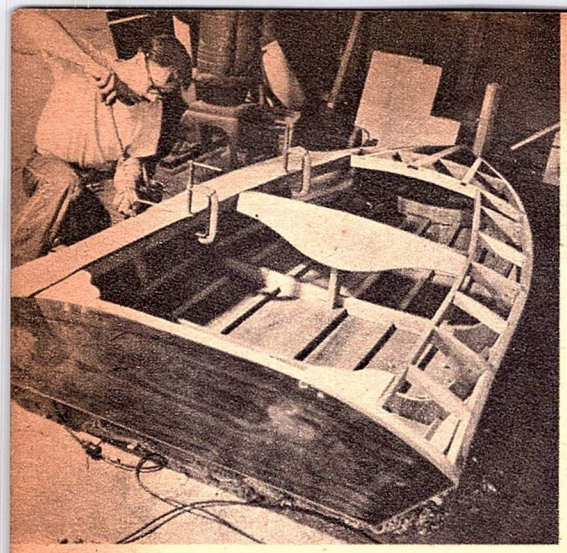
The bottom panels go on in much the same manner except that there is a butted seam down the center line. Carefully cut



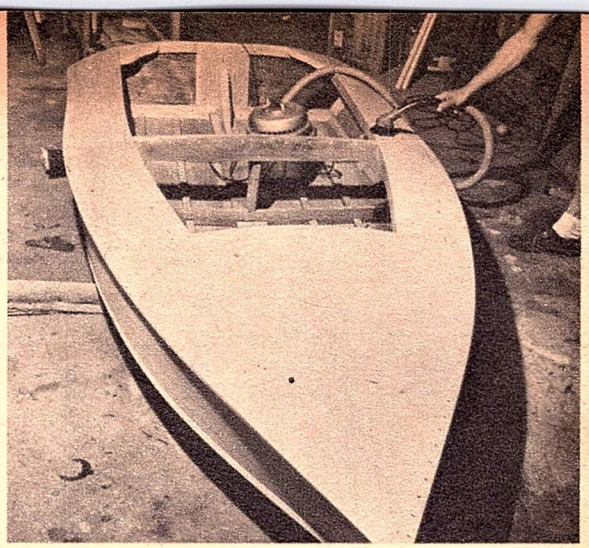
To plane, open throttle with left hand and move weight forward by stretching out toward the bow.

FIG. 4


CONSTRUCTION PROFILE
LOCATE AFT SEAT IN FINAL POSITION AFTER TEST RUNS
SEATS- TO BE NOT LESS THAN 10" WIDE. ¾"PLYWOOD
SHEER
½" PLYWOOD DASH
COAMING
8"
DECKING-3/16" PLYWOOD
CENTER BATTEN-⅜"X1½" SPRUCE
STEM-1½"OAK OR TWO THICKNESSES OF ¾" PLYWOOD.
FRAMES-¾"X2" SPRUCE
¼" PLYWOOD GUSSETS
CHINE
STEM CAP-¾"X1" OAK
STEM-TO-KEEL FASTENINGS-3/16" BRONZE BOLTS.
6"
TRANSOM KNEE-1¼" OAK 8"X8"
SEAT RISER-¾ X1¾ OAK. LOCATE VERTICALLY ABOUT AS INDICATED.
DASH STANCHION- TO BE CUT FROM ½" PLYWOOD OR ¾"OAK. NOTCH OVER FRAME.
KEEL-1"X4½" SPRUCE
OPTIONAL TRANSOM STIFFENER-¾"X1¾" OAK- SET ON EDGE.
— SCALE —
INCHES
12 9 6 3 0
FEET
1 2 3
TRANSOM FRAMING-¾"X2" OAK.
COCKPIT COAMING-¾"X1¾" SPRUCE
SHEER-¾"X1¾" SPRUCE
DOUBLED BEAM AT BUTT IN DECKING
TRANSOM-¾" MARINE PLYWOOD, FIR OR MAHOGANY.
ABOUT 9"
DECK BEAMS ON FORWARD DECK AND COCKPIT SIDES SAWN SPRUCE, ⅝"X1¾" MINIMUM DEPTH.
FOREDECK BEAMS EQUALLY SPACED.
KNEE-1¼"X6"X6" OAK OR MAHOGANY, SHAPED TO CROWN OF TRANSOM.
BRACKET PIECE-1¼"X1¼" OAK
19"
DASH-½" MAHOGANY PLYWOOD CUT TO SUIT KNEE ROOM AND DIAMETER OF STEERER BASE.
BATTENS-¾"X1" OAK, NOTCHED INTO FRAMES, CHINE AND TRANSOM FRAME.
11½"
8" 8" 8" 8"
KEEL, BATTENS, CHINE AND SHEER NOTCHED INTO TRANSOM FRAME ONLY. NOT TO EXTEND THROUGH THE TRANSOM.
¾"DOUBLER, 12" WIDE.
CHINE-¾"X1¾" OAK
BOTTOM FRAMES-¾"X2½" MINIMUM AS PER SECTIONS.
TWO ¼" MARINE PLYWOOD GUSSETS AT CHINES
LINE OF DECK EDGE AT SIDE.
CONSTRUCTION PLAN

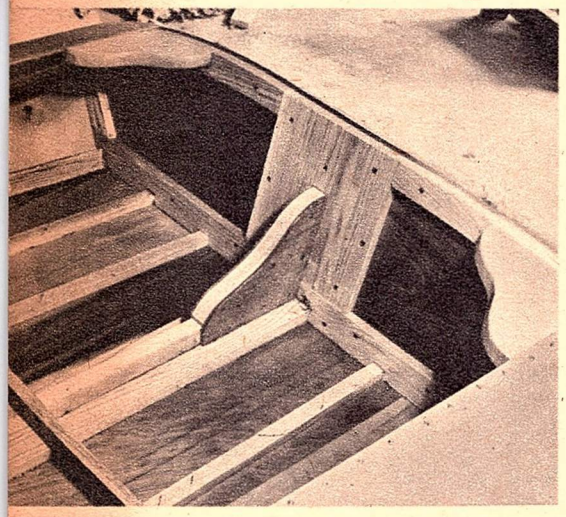


Here, the deck beams, coamings, knees, and dash have been installed and the decking is going on.

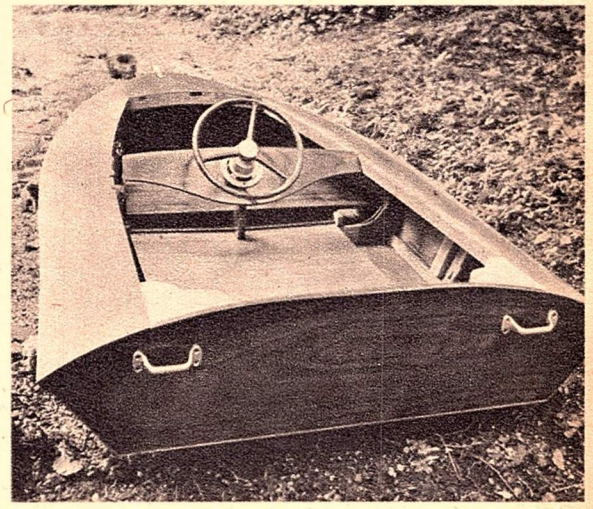


Completed hull is thoroughly sanded and all dust is vacuumed away before painting or varnishing.

Close-up of transom knee. Version shown here is heavier and stronger than that detailed in plans.

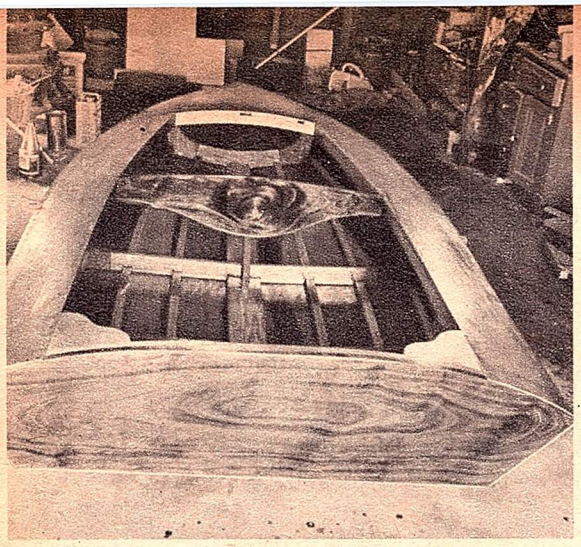


Finished boat with hardware installed. Aft seat was omitted by builder, who preferred to kneel.



the panels so this seam will be a fine one. A ¼x1-in. oak rub strake is glued and screwed along each chine to protect the open edges of the bottom planking. Stagger 1-in. fastenings 4 in. apart along the length of each rub strake from stem to transom. Where the side planking laps the stem, a stem cap, shown in Fig. 4, covers the open edges.

11. Now you're ready to turn the boat over and put on the deck. Prepare a couple of suitably padded sawhorses, remove the temporary braces, call in a couple of husky friends, and place the boat right-side up on the horses. Fashion the deck beams, sawing them to the crowns shown on Fig. 2, and fasten them to the frame heads and sheers with 1¼-in. screws. When the beams are in, fair them in a manner similar to that used when fairing the sides and bottoms. Fit a doubled beam at the forward end of the cockpit and a center-line batten in the forward deck. Secure the decking with glue and ¾-in. screws on 4-in. centers. Fasten ¼x1-in. sheer guards, gluing and fastening them like you did the rub strakes. Carefully fit the transom knee and the coaming knees, securing them with ample glue and husky fastenings.



Hull after varnishing. If fir plywood were used instead of mahogany, exterior would be painted.

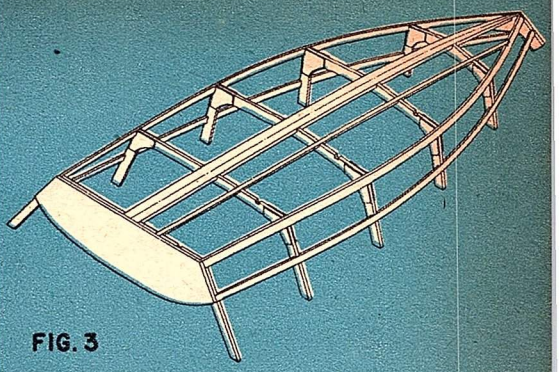


FIG. 3

FRAMING ARRANGEMENT

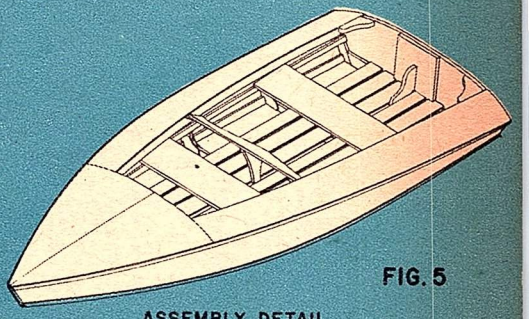
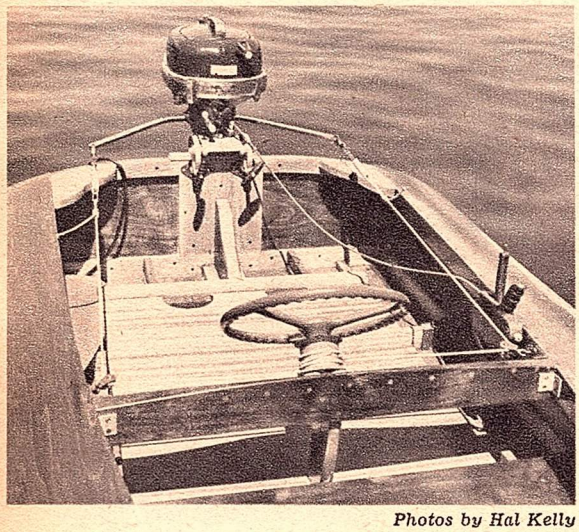


FIG. 5

ASSEMBLY DETAIL

Toe holes in plywood floor boards, shown here, proved to be dangerous, so should be left out.



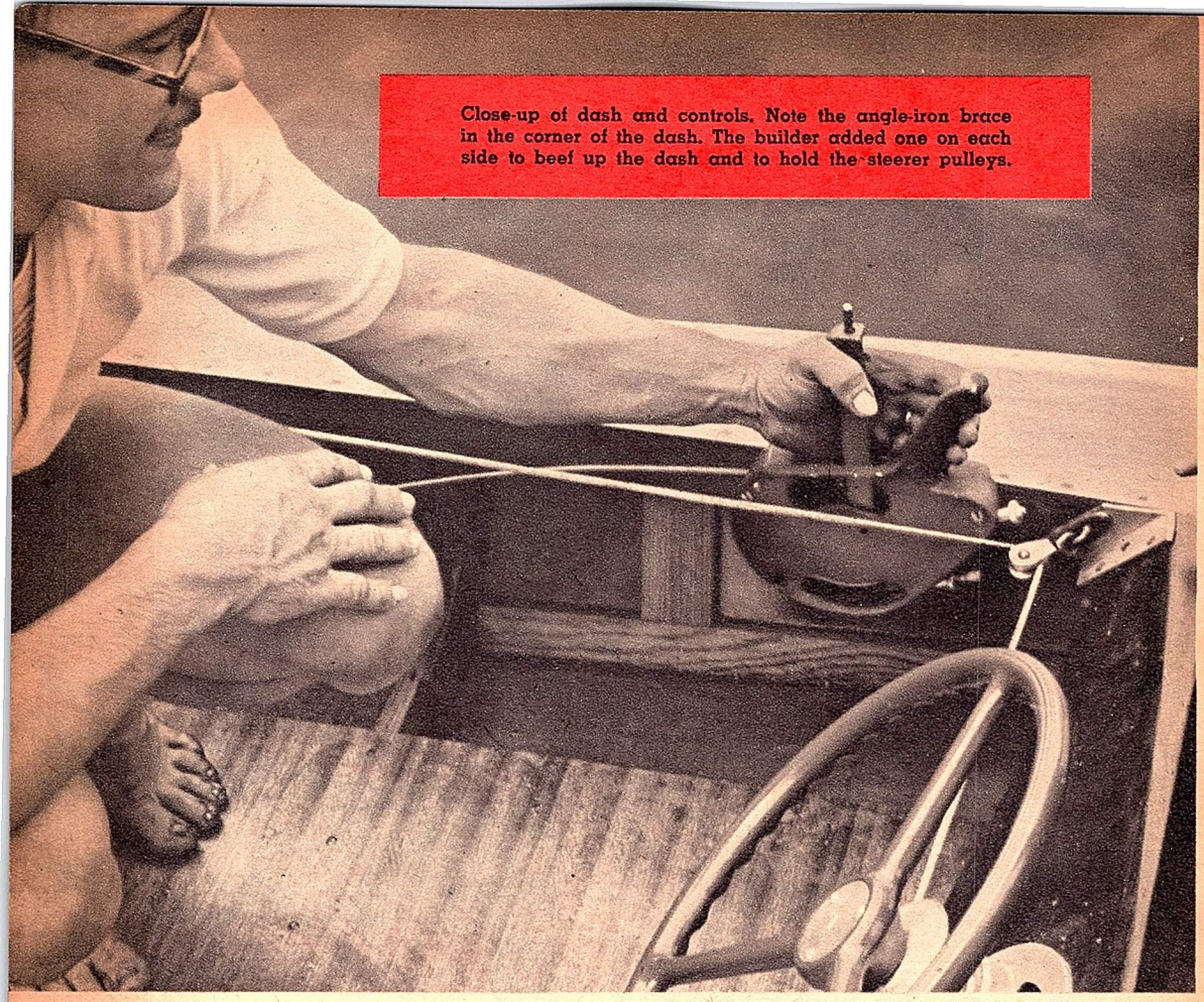
Photos by Hal Kelly

LARGE-SCALE PLANS

will greatly simplify construction. Send $3.00 to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Conn. Please specify Plan No. B-203.

12. Next come the finishing touches. Instead of the floor boards shown, plywood panels can be substituted if you wish. The best way to determine proper seat heights is to experiment. For the after seat, temporarily clamp the dash and steerer in place and sit in the boat on something approximately the height of the after seat. Move the dash and seat back and forth and up and down until you feel comfortable at the wheel. Install the seat risers, but don't fasten the after seat permanently with the idea that "this is it—for good." Trials with the boat underway may prove it advisable to change the location slightly. Install the dash, together with the centerline stanchion on frame No. 3 and coaming brackets, and permanently secure the forward seat to the seat risers. Remembering that APBA rules for Class B stock utilities require a seat that is at least 30 in. wide and will hold two people, locate the front seat as shown in Fig. 1.

13. A slick paint job is a necessity in a racing boat, so reconcile yourself to a lot of sanding. Using a good surface filler such as Wood-Dough, fill in all tool marks and fastening holes in the sides, bottom, and deck. Don't employ a putty or imitation wood sealer for this job—their shrink-



Close-up of dash and controls. Note the angle-iron brace in the corner of the dash. The builder added one on each side to beef up the dash and to hold the steerer pulleys.

Photos by Dan Rubin

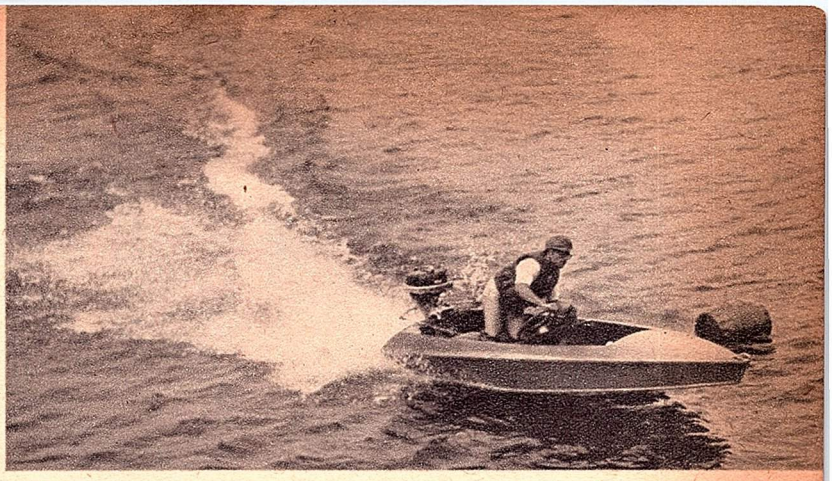
ing characteristics render them next to useless. When the filler is dry, sand until you can feel no unevenness when you stroke the surfaces with the palm of your hand. Treat the coamings, seats, dash, and transom in a similar manner; then clean the boat thoroughly, using a vacuum cleaner if one is available. Before painting, clean up the shop, removing all chips, shavings, sawdust, and debris. Some careful workers even go so far as to use vacuum cleaners on the walls, tool racks, benches, and machines so no dust particles are left that might mar the paint.

14. Apply a coat of plywood sealer and two or three coats of spar varnish or marine paint to the interior. Allow each coat to dry thoroughly and lightly sand and clean it before applying the next coat. The author prefers a varnished interior, but paint can be used if you wish. In this event, we recommend that you at least varnish the seats, dash, and coamings.

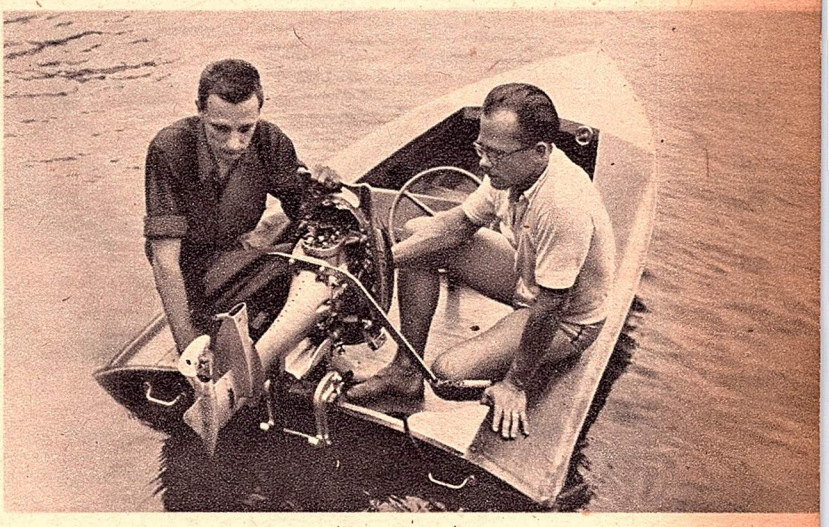
Use a sealer such as U. S. Plywood's Firzite, which does not raise the grain of the wood when applied. Some plywood companies and several paint manufacturers suggest that, where paint rather than varnish is to be used as a finish, a second sealing coat be applied over the first; and that in this second coat be mixed flaked aluminum paste, 1½ lbs. of paste to the gallon of sealer. The mixture should be stirred frequently during application and may be lightly sanded after a day or two of drying. This second sealer coat is especially recommended when the boat will be left in the water for extended periods. Should you keep the boat on a trailer or elsewhere out of the water when it's not in use, the initial sealer coat is ample.

After finishing the interior, apply sealer to the bottom, sides, and deck. The final color scheme is entirely up to you. If you plan to race, pick bright colors so the race officials and your shore crew and cheering section can spot you in the fleet. Your racing identification numbers should contrast sharply with the topside color.

A word about names and advertising



Rounding a buoy at nearly full throttle. A lot of experimenting with motor heights and angles will be necessary if you hope to get the greatest possible speed out of the little utility racer.



Mosquito's builder, Harold Kelly, and Boating Editor Jock Kingdon inspect the Quicksilver lower unit on Kelly's Mercury Super Ten outboard motor. This job holds all Class BU records.

matter on your boat. Don't pick a name that may be construed as being off-color or, as the rule book puts it, "of such nature as to cause embarrassment and cast discredit on the sport." Also, you can't name the boat after any commercial product or carry on the hull any trade-marks or advertising matter with the exception of decals from the manufacturers of such products as gasoline, oils, and spark plugs.

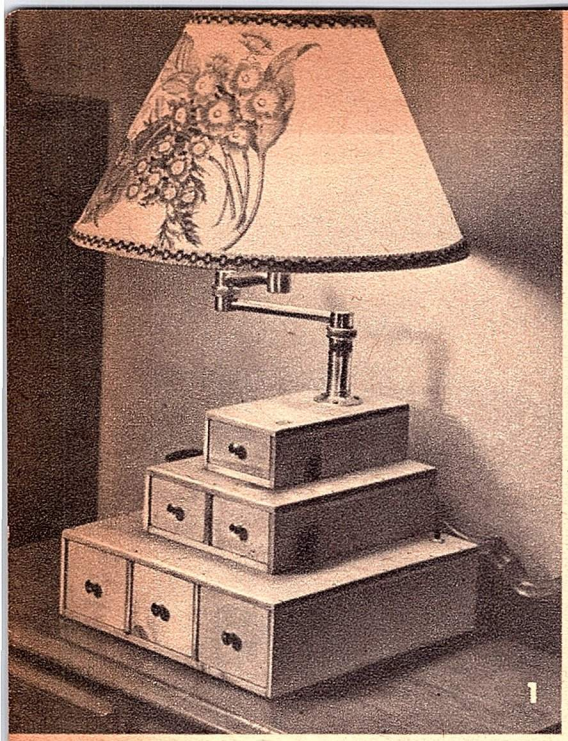
15. Finally comes the installation of the hardware and gear. Secure the bow handle with long screws driven into the deck batten and stem. Bolt the lifting handles in place on the transom, locating them to suit. Bolt the steerer to the dash panel and place the motor on the transom. Position the dashboard pulleys to provide good leads to the tiller arms and bolt them in place, then rig the tiller lines. Locate the throttle control to suit your reach.

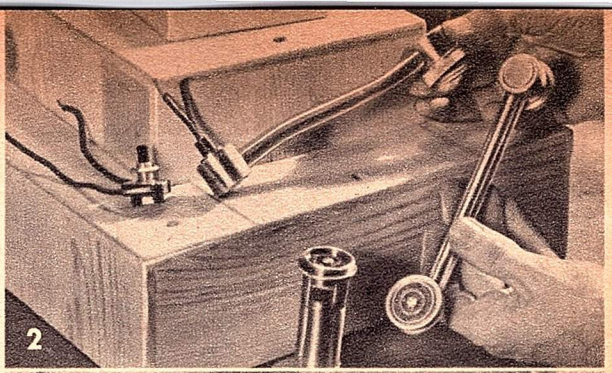
You're now ready to launch and test Mosquito. Check your steering gear, throttle control, gas, and personal equipment. Put on your life jacket and crash helmet. Push the nose away from the dock, start the motor, and idle out into clear water. To make the boat plane, open the throttle and lean forward.

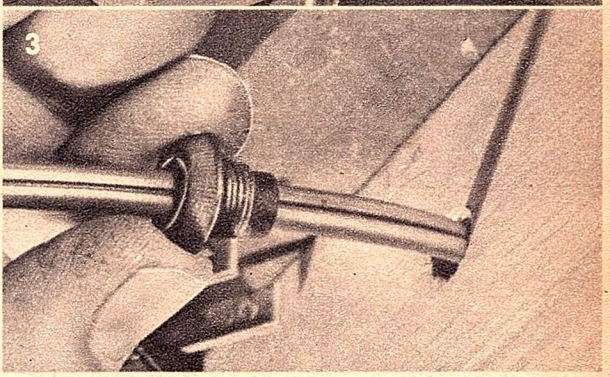
You should be quite pleased with her running and turning characteristics on the first run, but don't be satisfied. Experiment with the motor height and angle and location of the after seat, carefully noting the changes in speed, if any, after each alteration. A good marine speedometer is a handy little gimmick to have while running the trials.

While the location of the racing fin shown in Fig. 1 is about correct for most combinations, you may find that the turning characteristics of the boat will be improved if the fin is moved a bit forward or aft of the indicated position. The fin provides lateral resistance to sideways skidding motion. Its ideal location will vary with crew weight, bottom shape, and other variables.

To get your racing number, send $10 to the American Power Boat Association, 700 Canton Ave., [*Continued on page* 179]





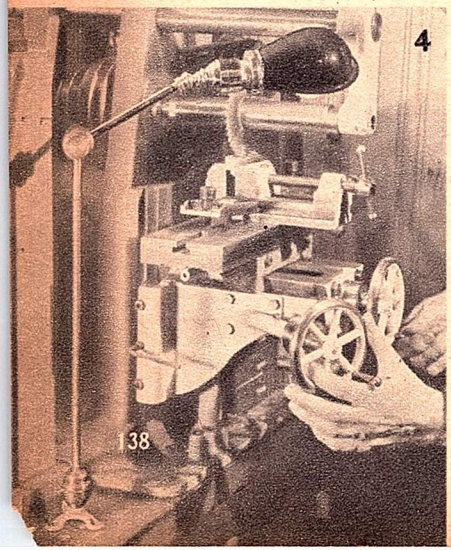


Light Where You Want It

Build these two lamps using the new rotating swivel connectors, and spotlight any area in your home or shop.

By Walter E. Burton

BOTH lamp projects featured on these pages are novel in several ways. The spice cabinet table lamp has at least three unusual aspects: first of all, the five-drawer base provides storage space for small articles; secondly, the lamp has a swinging arm assembly, now available to home craftsmen, which permits your light to be moved to [*Continued on page* 190]

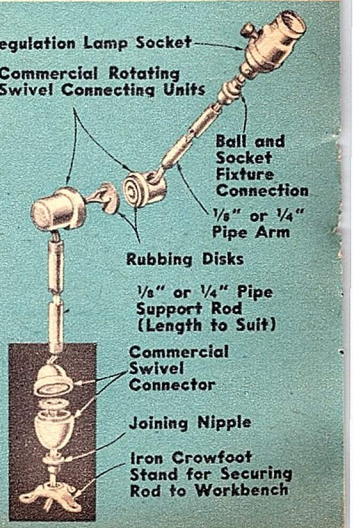


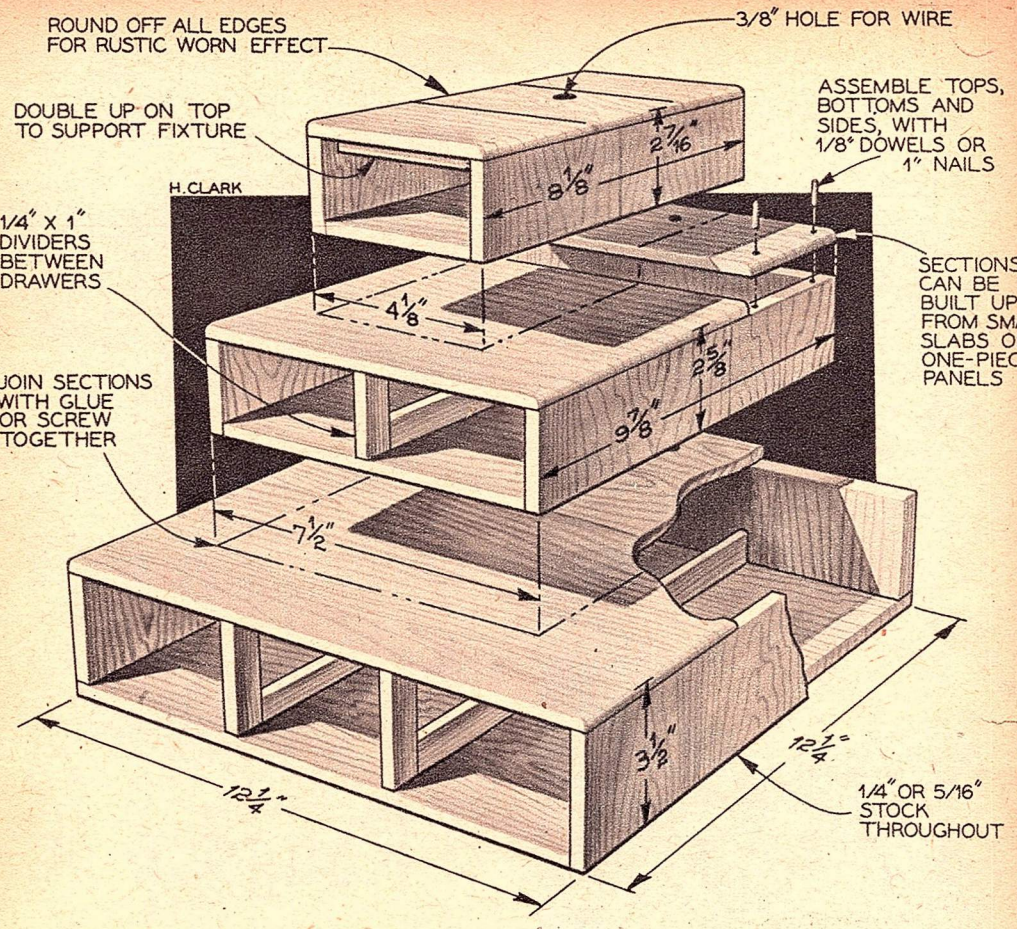
1 Colonial atmosphere and unusually good lighting are combined in one clever lamp.

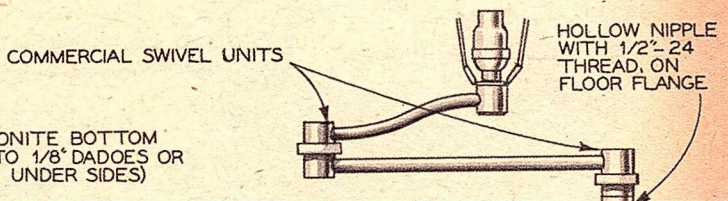
2 Rotating swivel connectors maintain electrical contact throughout 360° revolution.

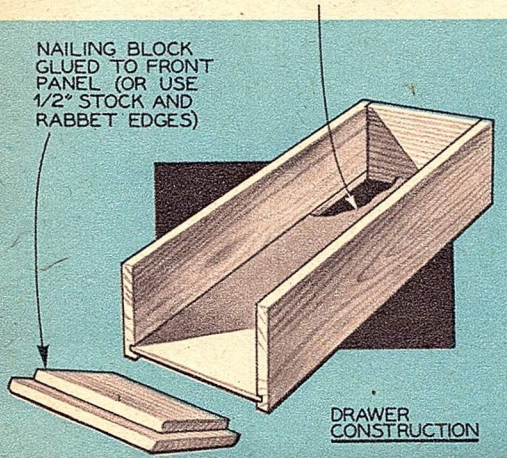
3 Hard rubber bushing is inserted in the hole through which cord enters the base.

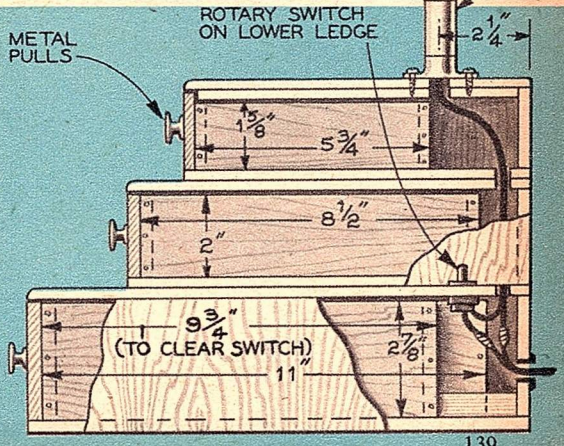
4 Shop lamp also uses pair of swivel connectors. Select lengths of pipe according to the range which you expect the lamp to cover.




ROUND OFF ALL EDGES FOR RUSTIC WORN EFFECT
3/8" HOLE FOR WIRE
DOUBLE UP ON TOP TO SUPPORT FIXTURE
ASSEMBLE TOPS, BOTTOMS AND SIDES, WITH 1/8" DOWELS OR 1" NAILS
H. CLARK
1/4" X 1" DIVIDERS BETWEEN DRAWERS
SECTIONS CAN BE BUILT UP FROM SMALL SLABS OR ONE-PIECE PANELS
JOIN SECTIONS WITH GLUE OR SCREW TOGETHER
2 7/16"
8 1/8"
4 1/8"
2 5/8"
9 7/8"
7 1/2"
3 1/2"
12 1/4"
12 1/4"
1/4" OR 5/16" STOCK THROUGHOUT


COMMERCIAL SWIVEL UNITS
HOLLOW NIPPLE WITH 1/2"-24 THREAD, ON FLOOR FLANGE


1/8" MASONITE BOTTOM (SET INTO 1/8" DADOES OR NAILED UNDER SIDES)
NAILING BLOCK GLUED TO FRONT PANEL (OR USE 1/2" STOCK AND RABBET EDGES)
DRAWER CONSTRUCTION


METAL PULLS
ROTARY SWITCH ON LOWER LEDGE
2 1/4"
1 5/8"
5 3/4"
8 1/2"
2"
9 3/4" (TO CLEAR SWITCH)
11"
2 7/8"

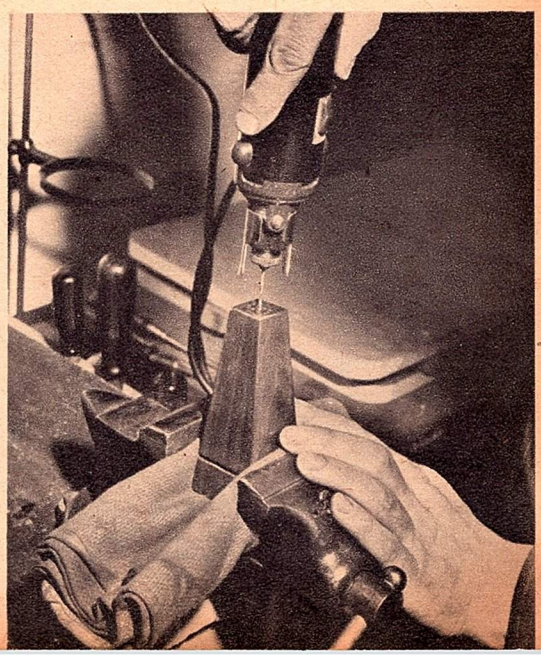
As a gracious hostess, your wife will take great delight in setting the dinner table with these exquisite salt and pepper shakers made of fine walnut.

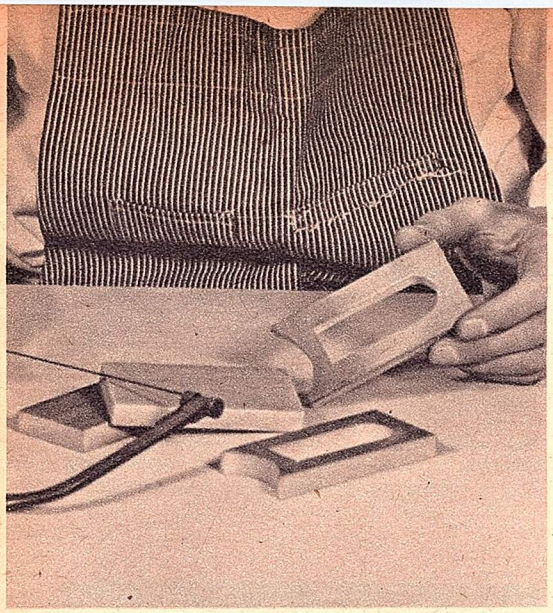


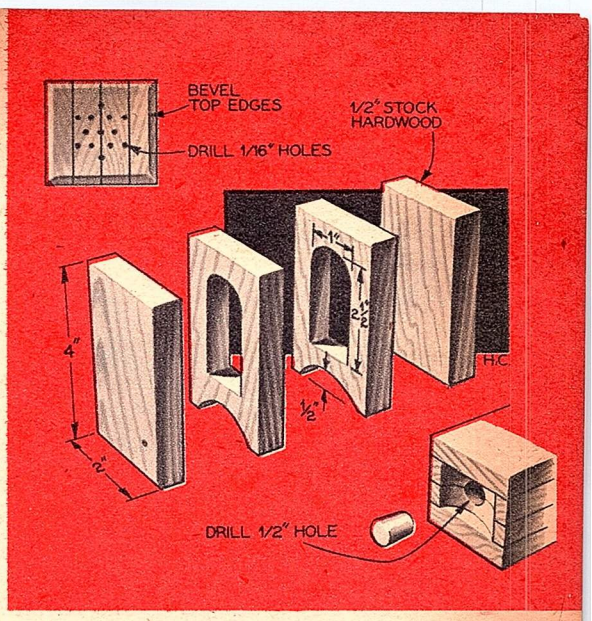
The less formal type of salt shaker shown above is cut out of four pieces of wood as indicated in the drawing at the extreme right.

Salt Shaker Roundup

The type of drill shown below is handy for drilling the letters S or P in the top. To prevent marring, wrap shaker in a towel before clamping it in vise.





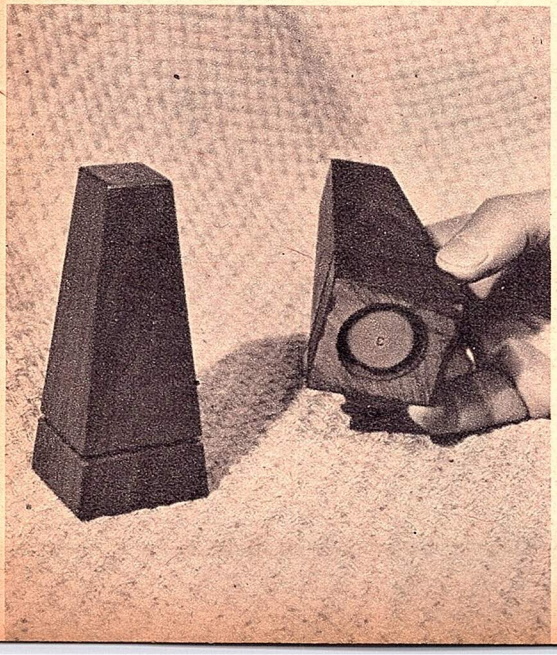


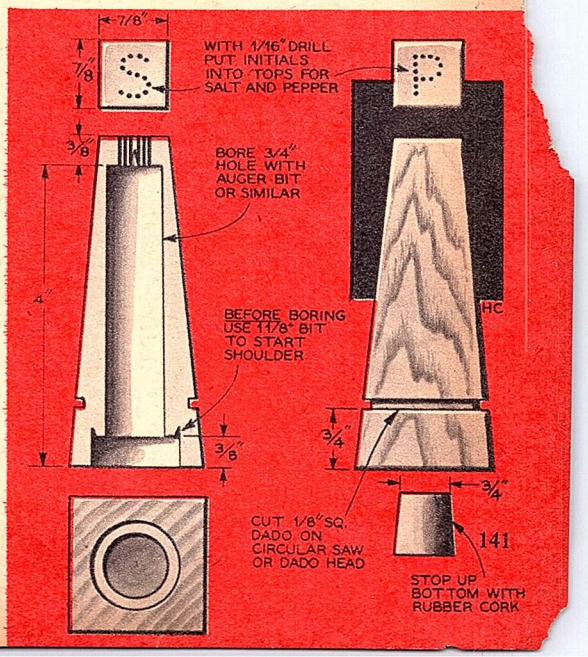
The curved area in the two center pieces provides finger clearance for the stopper. Parts can be cut with a coping saw if you haven't got a jig saw.

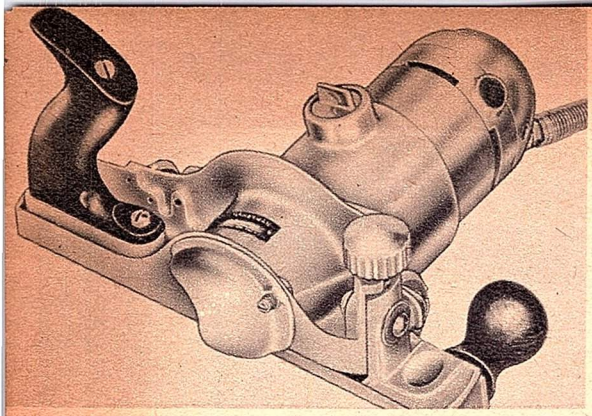
FOR a real custom touch to your dinner table, add a pair of wooden salt and pepper shakers. Oddly enough, a tour of some of the larger department stores in New York City revealed an absolute lack of such table necessities—in wood. Besides their beauty, wooden salt shakers have another important advantage. Salt will pour freely out of them under conditions of dampness that would clog those made of glass. The wood seems to absorb the moisture in the inside of the shaker leaving the salt relatively dry.

The tapered shaker is a fairly simple project. It is made of two identical blocks of walnut, each measuring 1¾x1¾x4½ in. After the blocks are cut square, cut a ⅛ in. dado completely around the base of each block not more than ¼ in. deep. The next step is to drill a ¾ in. hole to within ⅜ in. of the top. Be careful, if you drill too far the spur of the bit will break through the top, ruining it. Counterbore the hole for a finger recess to permit easy withdrawal of the cork. The counterbored area should measure about 1⅛ [*Continued on page* 187]

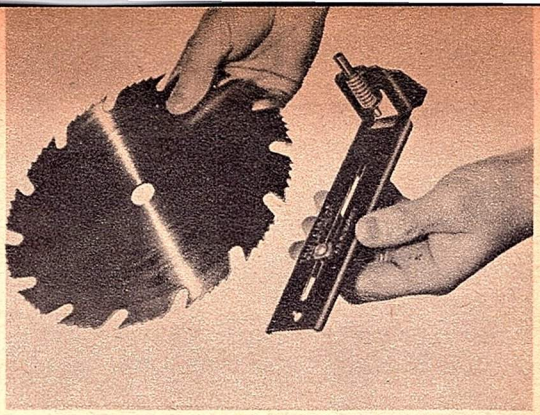
Rubber laboratory corks, size 3, fit perfectly into the bottom. The hole is counterbored for finger space to permit easy removal of rubber stopper.



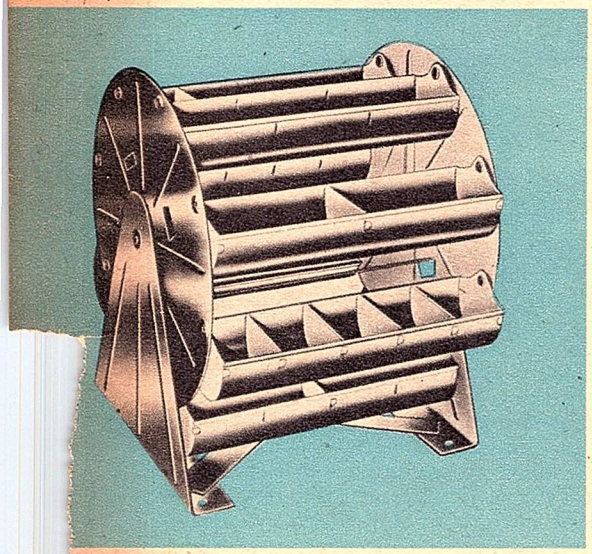




New power plane, operating at 18,000 rpm, will make a cut up to 1⅜-in. wide. Uses a ⅜ hp motor; made by Stanley Tools of New Britain, Conn.



Saw setting jig, made by A. D. McBurney of Los Angeles, accepts saws from 6 in. to 10 in. in diameter. Takes combination, rip or cross-cut blades.



NEW for the SHOP

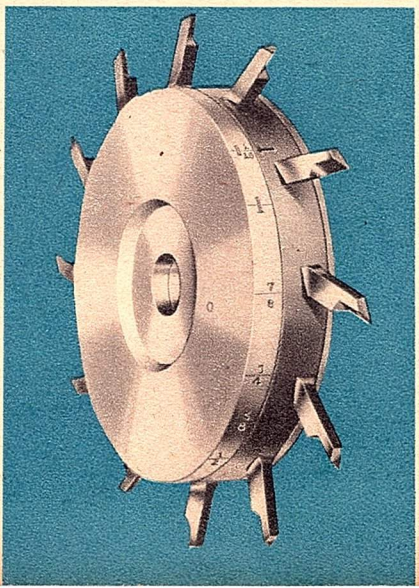
Revolving small parts container for nuts, bolts, screws and similar items has eight revolving troughs containing 28 bins. Made by H. J. Manufacturing Co., Linwood, Mich.

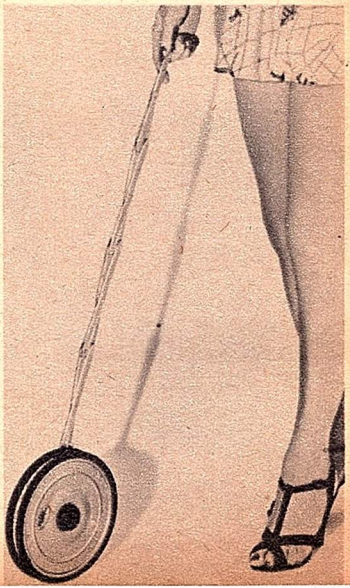
Liquid Wrench is a fluid used for freeing tightly "frozen" metal parts. Made by the Radiator Specialty Co. of Charlotte, N. C.

This adjustable dado tool cuts up to 1 in. deep in widths from ¼ in. to 1 1/16 in. Made by Consolidated Machinery Co. of L.A.

Tape has automatic counter for measuring large areas. Clicks every two feet and sounds bell at 100-ft. mark. Made by Rolatape Inc.







Vacuum Cleaner Motor Makes

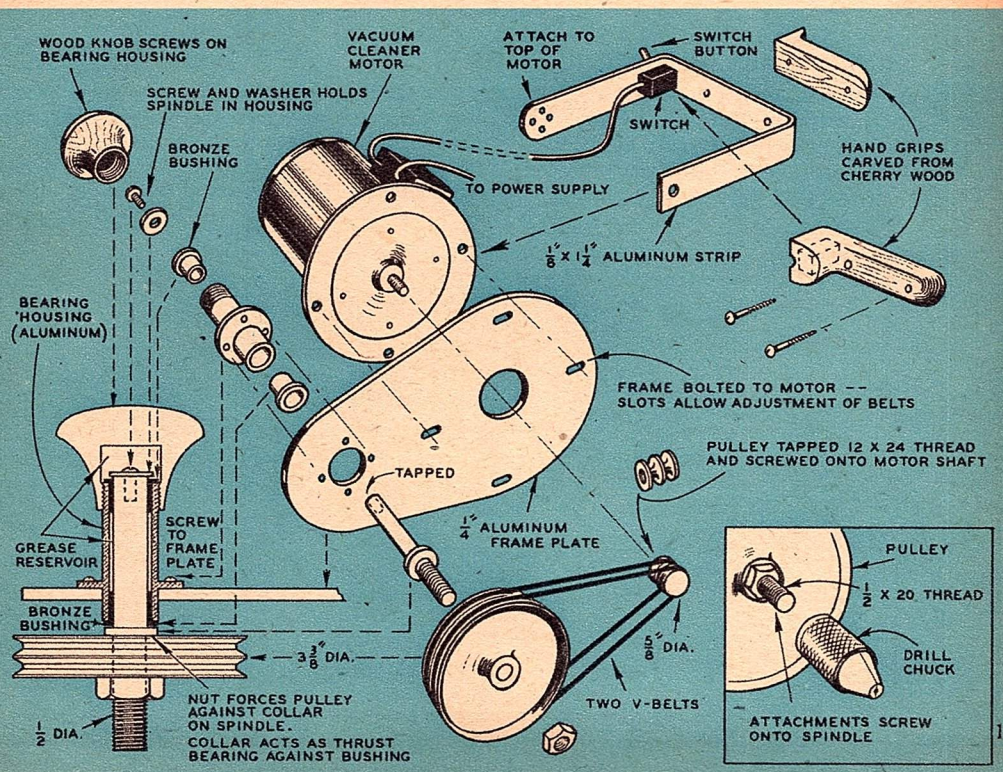
Electric Drill

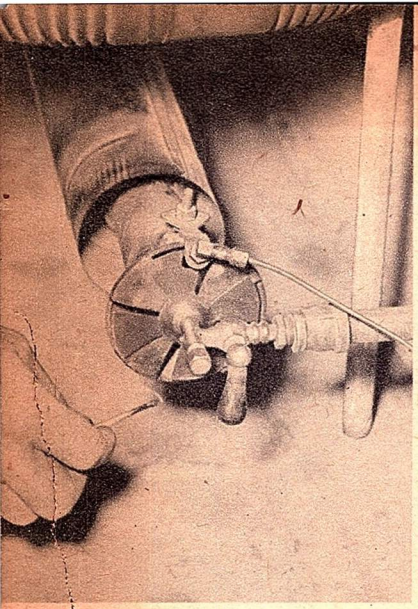


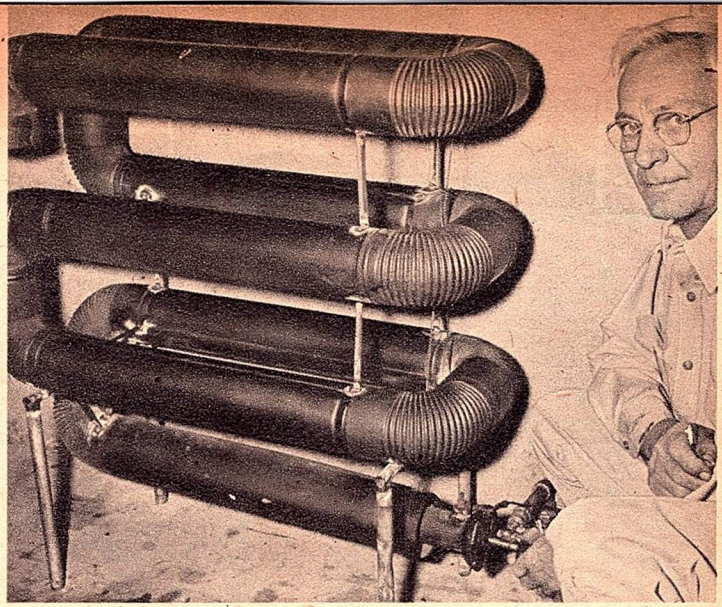


HAVEN'T you often wished you had a light portable power machine for sanding, drilling and polishing? After observing these machines at the dealers, the similarity of the motors to those of vacuum cleaners became apparent to me. A lightweight vacuum cleaner motor with the correct horsepower is ideally suited for a portable tool. The problem of gear reduction seemed difficult but I solved this by using V-belts developed for sewing machine drives.

The machine finally developed is quite simple to build and allows considerable leeway in design and materials. This unit was designed around a 330-watt motor from an Air-Way vacuum cleaner. Three hundred watts [*Continued on page* 167]





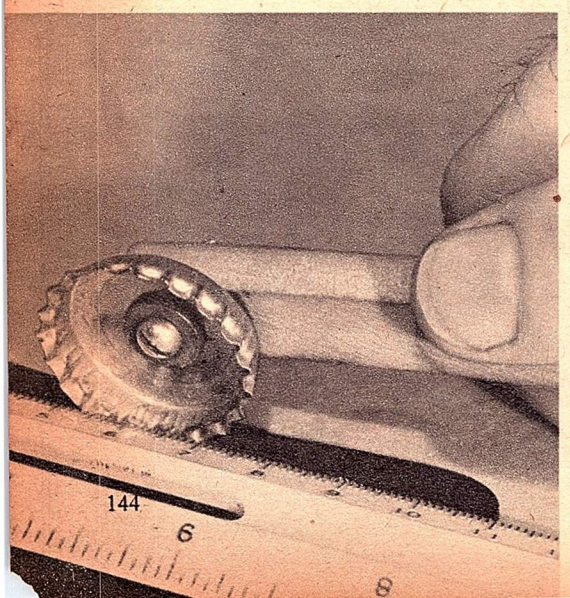


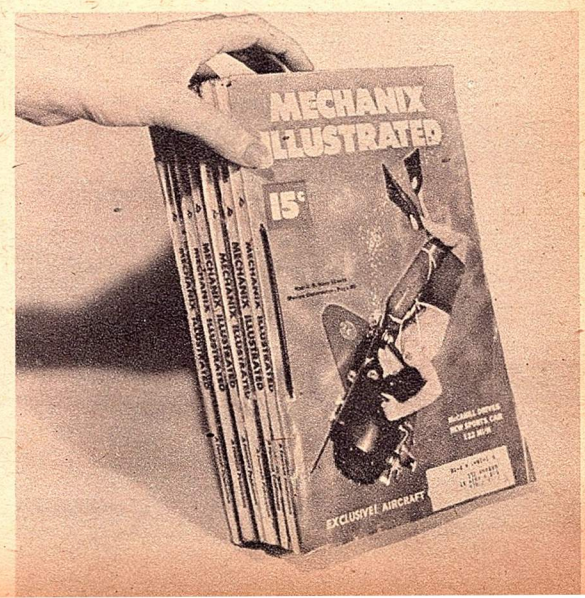
Shop Heater. Joe Mitchell of Albuquerque, N. M., made this gas-fired hot-air heater for his auto-repair shop for a total material cost of $8. It gives 35,000 BTU of heat and occupies a space of but 14x37x37 in. The two main parts are a combustion chamber and a radiator. The combustion chamber consists of a Chevrolet drive-shaft bell housing, a gas valve, a carburetor idling jet, and some sheet metal. The radiator is made from stove pipe.

home and

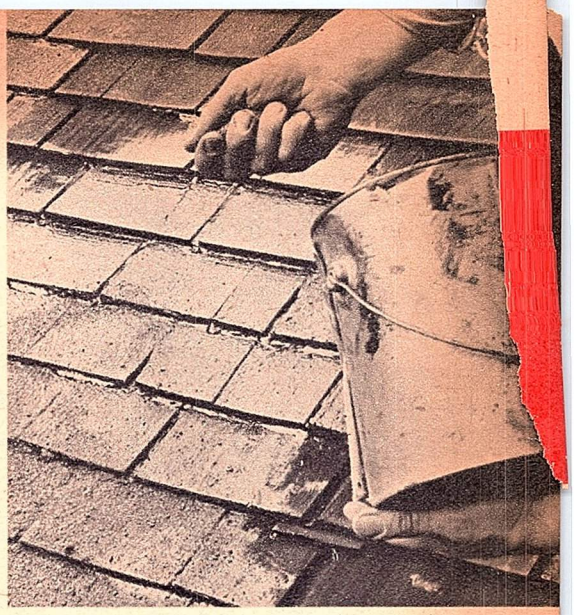
Bottle Cap Marker evenly spaces holes to be punched in leather. Remove the cork liner and secure the cap to a wooden handle with a screw, nut, and two washers. Mark leather by rolling cap along a ruler.

Your Copies of MI can be bound by drilling ⅛-in. holes ¼ in. from the backs of the magazines, running a length of stiff wire into the holes, and clinching the wire underneath. Drill several copies at once.









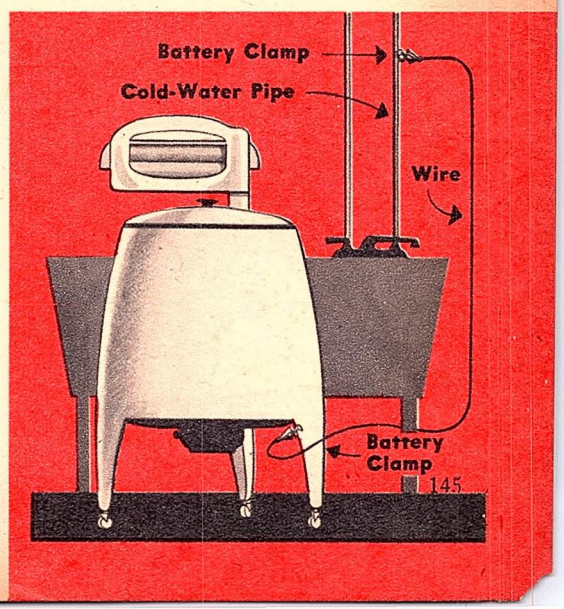
Renew Your Shingle Roof if the wood is starting to split and leak. Purchase black asbestos roof coating in five-gallon cans and a few sacks of "river-run" sand. Thin the coating to pancake-batter consistency with some gasoline. Starting at a corner and working toward the ridge, coat a 3x5-ft. area with the liquid, filling all the cracks. Scatter sand evenly over the fresh surface. Repeat the process until the roof is completely coated.

shop hints

Christmas Card Display. To make an attractive display, tack a folded length of green mosquito netting to the top of a door. Attach the cards to the net by clipping them in bobby pins slipped in the netting holes.



Ground Your Washer—if it should short, the shock might injure or even kill the operator. To prevent this, run a wire from the washer to a cold-water pipe. Use battery clamps at the wire ends.



MONTHLY

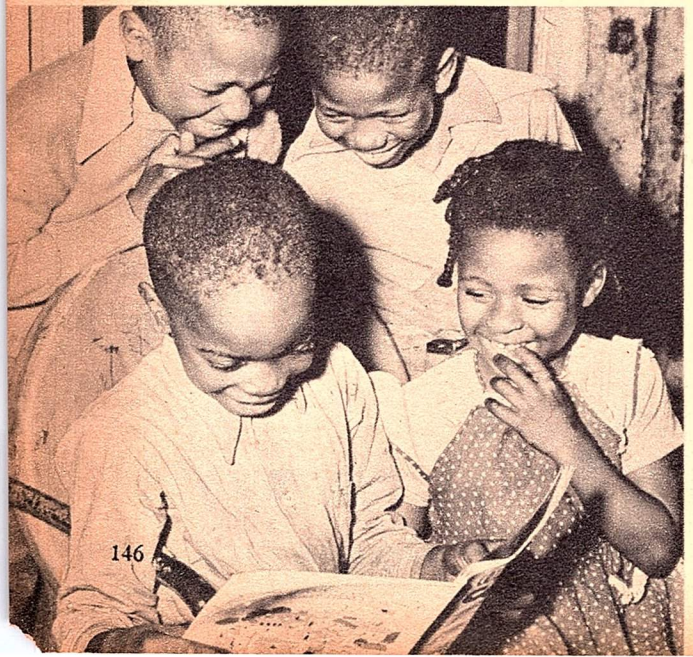
PHOTO CONTEST



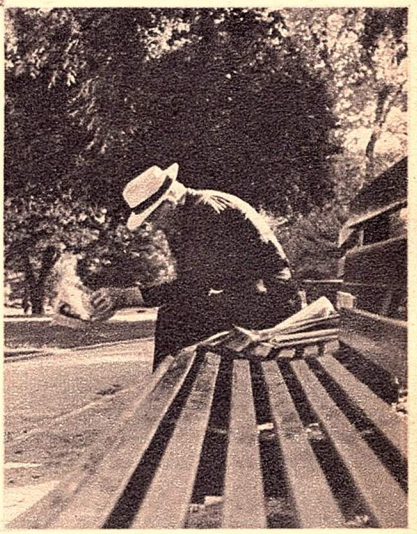
1st Prize ($10.00) .....Sunset
Taken with a Rollei by D. Hallinan of St. Petersburg, Fla.

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Please address your entries to: Photo Contest, *Mechanix Illustrated*, 67 W. 44th St., N.Y.C. 18

$5.00 Award .....Comics
By V. Patterson of Charlotte, N. C., with a Speed Graphic.

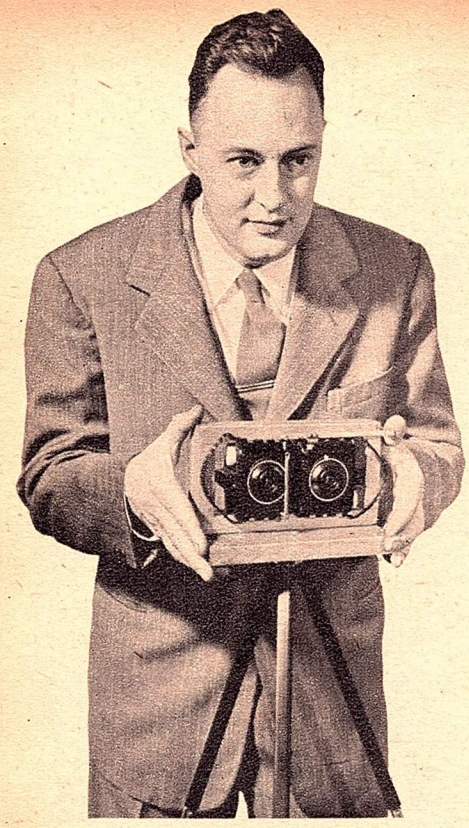


$5.00 Award .....Perspective
Taken by A. Segal of Philadelphia. Camera was placed on the end of the bench for photo.



$5.00 Award .....Black And White
By S. Lindberg of Washington. Processed in high contrast developers.

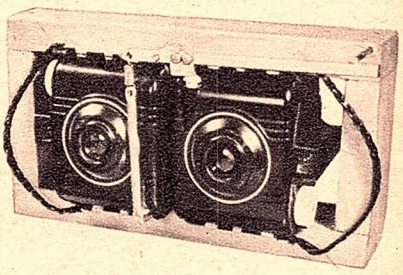




stereo with a brownie

Build this unit to bring three dimensional pictures within the reach of your pocketbook.

By William Esmond



This front view of the unit shows the trigger mechanism that trips both shutters at once.

STEREO photographs, commonplace years ago, are returning to popularity now with the added element of color to supplement the pleasure of viewing a scene in three dimensions.

Several inexpensive stereo viewers are now on the market for use with black-and-white prints and color transparencies. The photos offered are on a wide variety of subjects at a reasonable cost, but, those who wish to take their own stereo photographs are faced with the necessity of purchasing a moderately expensive stereo attachment for their own camera, or an expensive stereo camera. In either case the cost is considerable and deters many people from enjoying this medium of photography. Several methods are discussed in this article by means of which stereo photos in black-and-white, color transparencies or prints can be produced and viewed through an inexpensive commercial or homemade stereoscope.

The principle of stereo photography is that when two images are recorded photographically through two apertures separated by the normal inter-occular distance, a photographic record of the scene as actually seen by each eye is obtained. If moving objects are being photographed, both photographs must be taken simultaneously to avoid displacement of objects in the image in the second photograph due to motion.

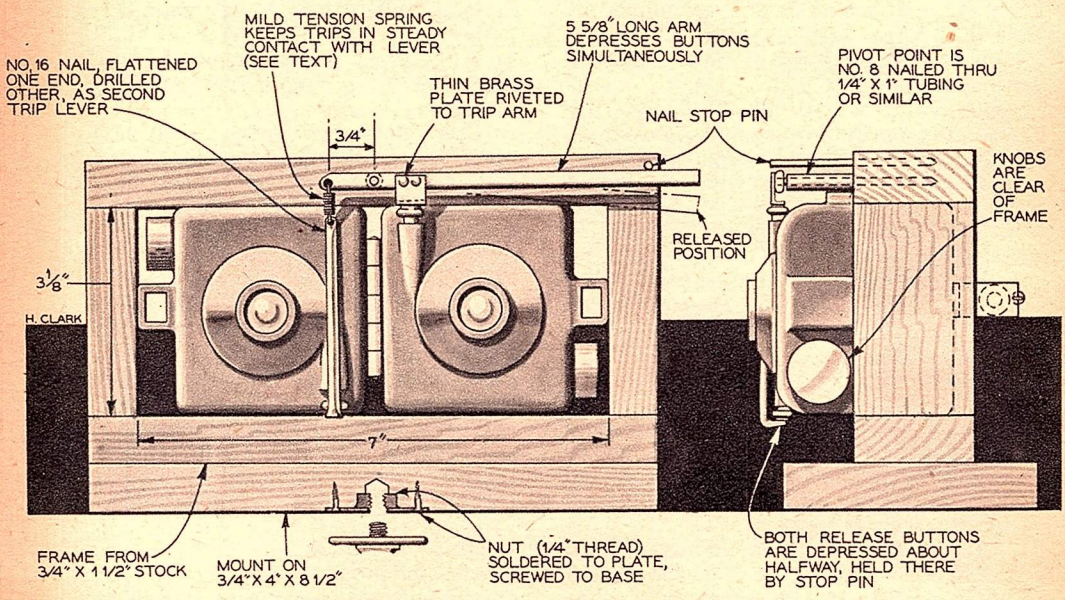
Although stereo photos cost twice as much to produce as single exposures, stereo vision greatly enhances the value of any scene. Whereas the average observer will look at a simple black-and-white or color photograph for a short while and then put it down, the same scene taken and presented in stereo will be eagerly scanned. Even the most minute details of the scene can be appreciated much better in three dimensions than they can be in an ordinary flat photograph. The enhanced value of a scene taken in stereo due to the illusion of three dimensions and increased detail far outweighs the slightly increased cost over a single photograph.

An economical stereo camera can be constructed by joining two Baby Brownie Special cameras. The picture quality obtained with these cameras is surprisingly good. The cameras are hinged together by means of a light 2-in. brass hinge. The brass

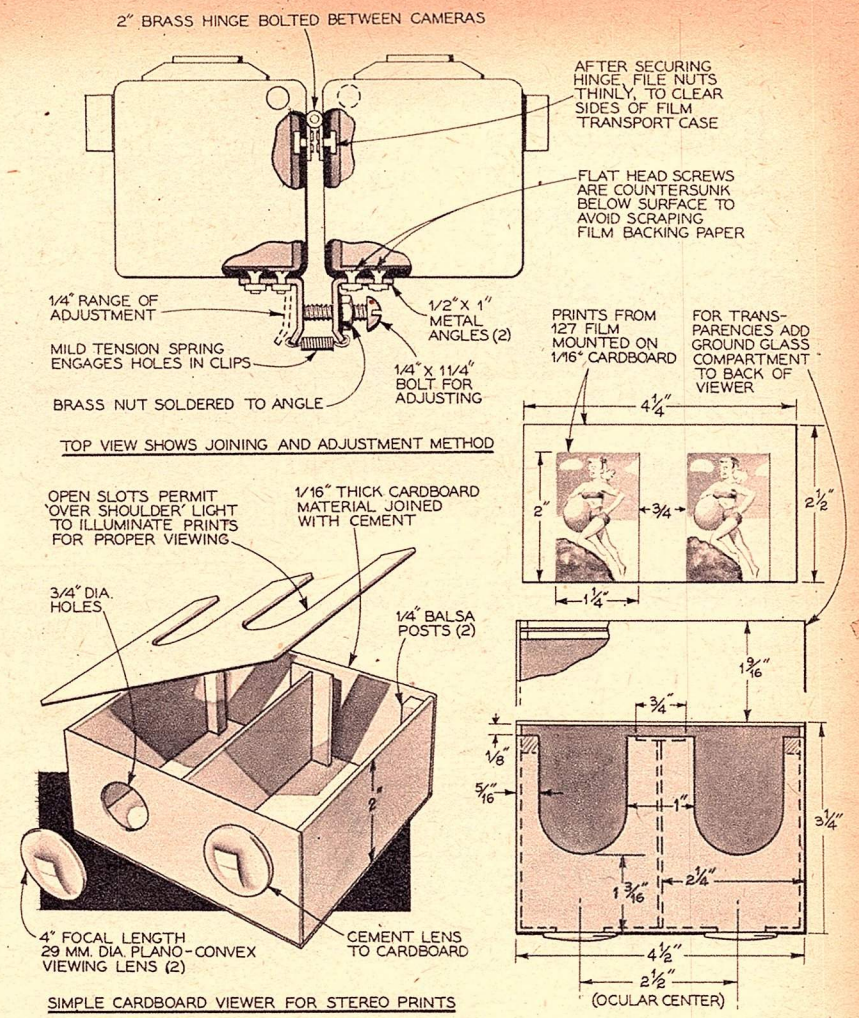
hinge is carefully fitted on the center of the flat side of one of the cameras and the holes in the hinge are carefully marked out on the Bakelite case by means of a scribe. After marking both camera cases in this manner, the holes are drilled and the two cases are fastened together by means of a hinge and brass bolts. The nuts are held in a vise and are filed down to half their original thickness. The bolts, when in position, are cut off flush with the nuts. This will provide ample clearance for inserting the film holder into the case.

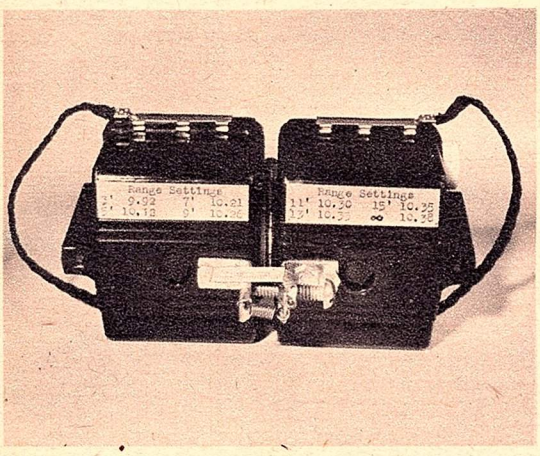
In order to adjust the angle between the cameras so as to allow for range and to complete the mounting, two brass angles are mounted on the back of each camera. Flat head brass screws are used and the heads are filed down until they fit into countersunk holes on the inside of each camera case flush with the surface. A ¼ x 1-in. brass bolt is used to accurately adjust the amount of space between the two cameras. A hole for the bolt is drilled in one of the angles and the brass nut is soldered to the angle. Two small holes are drilled in the end of each angle and a small moderately stiff spring is mounted between the two angles thus stabilizing the mounting.

In order to be able to calibrate this adjustment so as to be able to set the camera for my range, a small strip of copper is soldered to one of the angles and is bent so as to contact the top of the second angle. A scale cut from a celluloid ruler can then be fastened to the copper strip with model airplane dope. To calibrate this scale, the cameras are set parallel to each other. This may be quickly determined by means of a straightedge laid across the face of each camera. The cameras are then placed lens down, on a flat surface. Two strips of balsa wood 6 in. long, 1 in. wide and about $\frac{1}{16}$ in. thick, are cut. A centerline is drawn lengthwise on each piece. A nail is pushed through the center of the balsa wood strip ½ in. from each end and is secured in place by means of model airplane cement. When the cement has dried, each of the strips is mounted temporarily on the center of the top of one of the cameras, parallel to the optical axis of the camera. Parallelism to the optical axis can be tested by applying a triangle, with its base on the flat surface upon which the cameras are resting, to the tips of the nails mounted on the strips. Frequent testing and readjustment should be carried out until the cement has dried and the strips are firmly held. The cameras mounted with temporary sighting strips are then placed on a flat surface and with objects at distances of 3 ft., 5 ft., 7 ft., 9 ft., 11 ft., 13 ft., and infinity, the adjustable mounting is varied until the object at each range can be sighted simultaneously by lining up the two nails on [*Continued on page* 185]

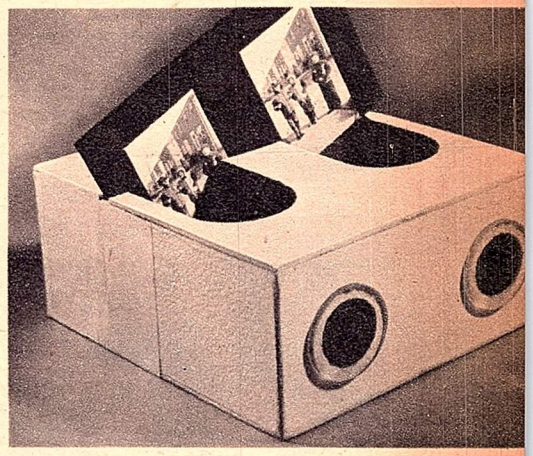


The above diagram shows the front and side views of the unit.

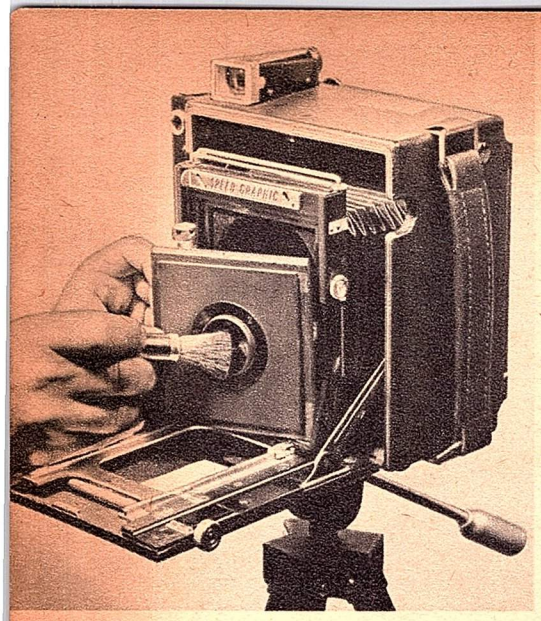


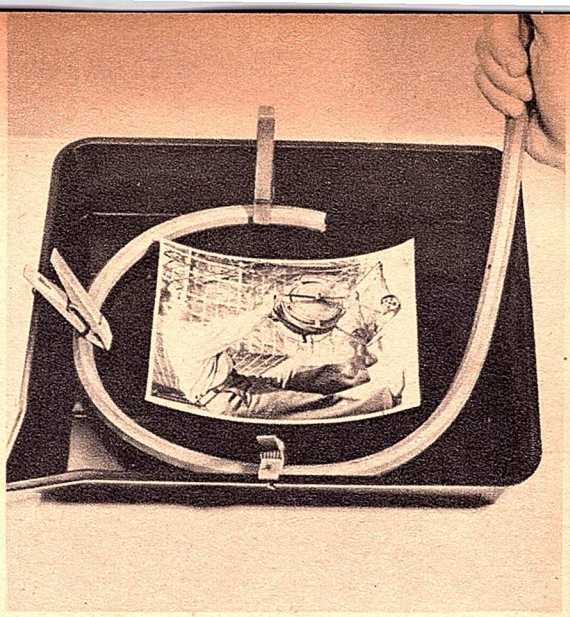


Rear view of the unit showing the method for varying the spacing and thus the angle between the cameras for photographs at different distances.



Another way to keep down costs is to make this viewer which can be put together for a few dollars. Chief items of expense are two plano-convex lenses.





Clean your lens regularly, not only the front but also the back which can accumulate a surprising amount of dirt. Only a fine camel's hair lens brush or lens cleaning tissue should be used.

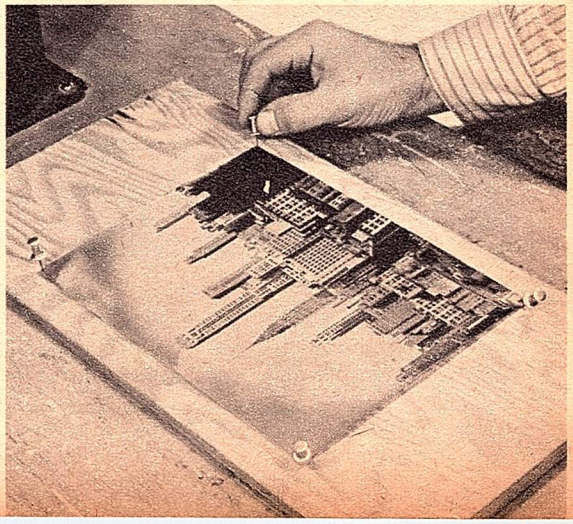
A print washer for small prints is quickly improvised from a length of rubber tubing. Curl the tubing inside the tray, holding it in place with clothespins. Tube may also be perforated.

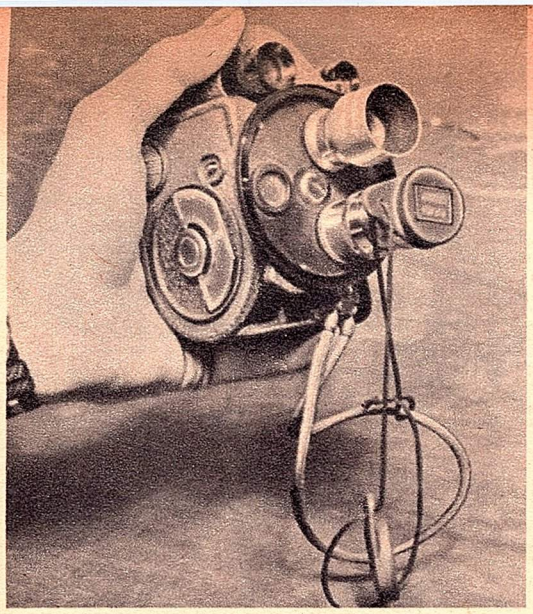
Photo Kinks

Quick drying of film tanks can quickly and easily be accomplished to allow a succession of films to be processed, by running a clean dry blotter carefully through the tank's reel grooves.

Borderless or bleed prints can be made without sacrificing part of the picture through trimming. By using pushpins to hold down the paper and inserting them at an angle the entire paper is used.



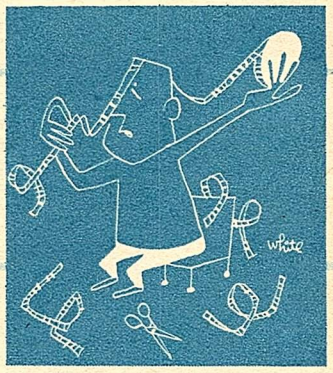






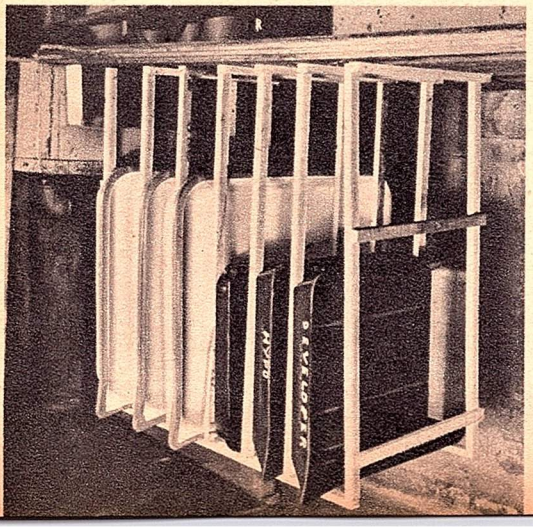
Lens caps seem to have a habit of disappearing entirely or hiding on the bottom of the camera case. To avoid this, a rubber band through the caps and strap will keep them handy.

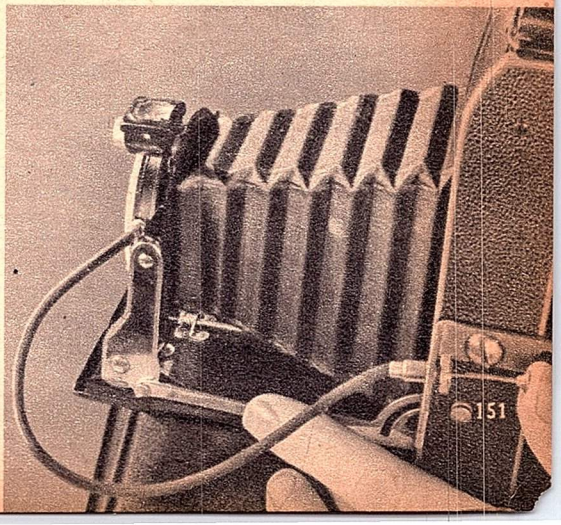
Sponge rubber lining in camera case will protect your camera from the bumps it usually gets in transit. The rubber should be fastened to the sides, top and bottom with rubber cement.

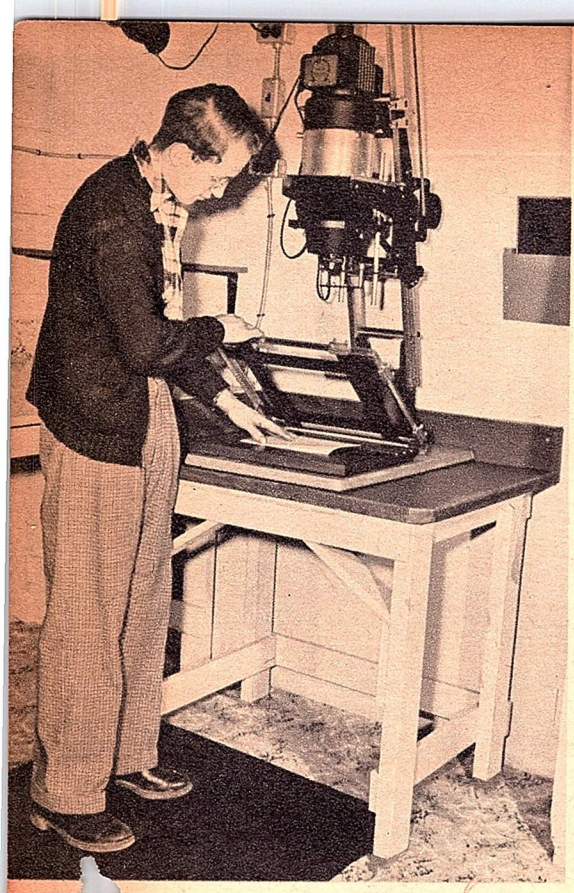


Tray racks can be made simply and at practically no cost, by cutting box wood into strips and fastening it with nails. The most convenient place to keep this is right under your work table.

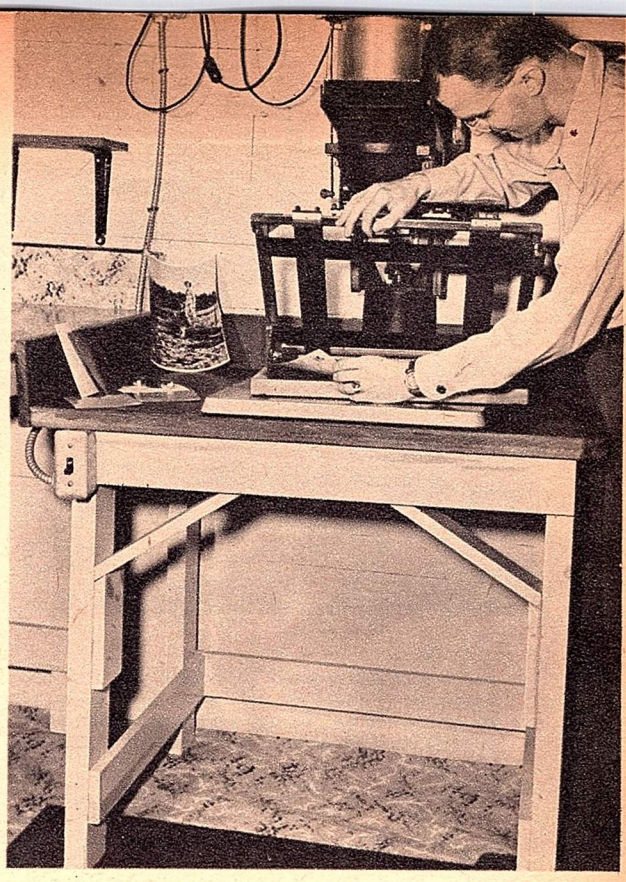
Angle bracket attached to body of your camera can be used to hold your cable release and allow you to operate it from the body of the camera for steadier and quicker picture taking.







The open front end of the table affords leg room but an extra shelf can be added if necessary.



Back boards on two sides of the table prevent objects from falling and still leave work room.

Enlarger Table

Work in comfort with this convenient table that features a built-in enlarger switch.

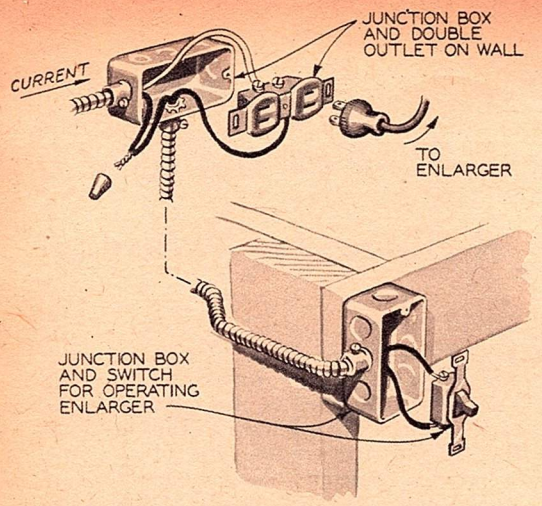
By Eric Wahleen

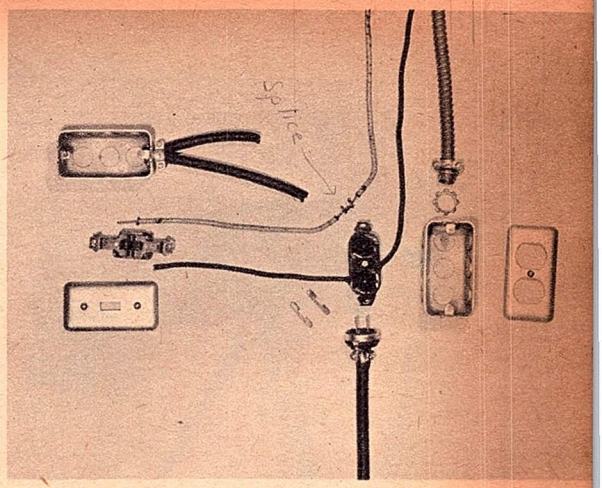
IF you're crowded for working space on your darkroom workbench or if you're just setting up a new darkroom, this handy and easy-to-build table is the answer. It will keep your enlarger and printing paper away from solutions and chemicals and will provide ample working space.

The total cost including all the wood and electrical supplies should be under $5.00. The Masonite covering works well as its surface tends to absorb the light rather than reflect it.

For extra storage space one or more shelves can be built under the working surface. These can be made the full length and width of the table or they can be made narrower.

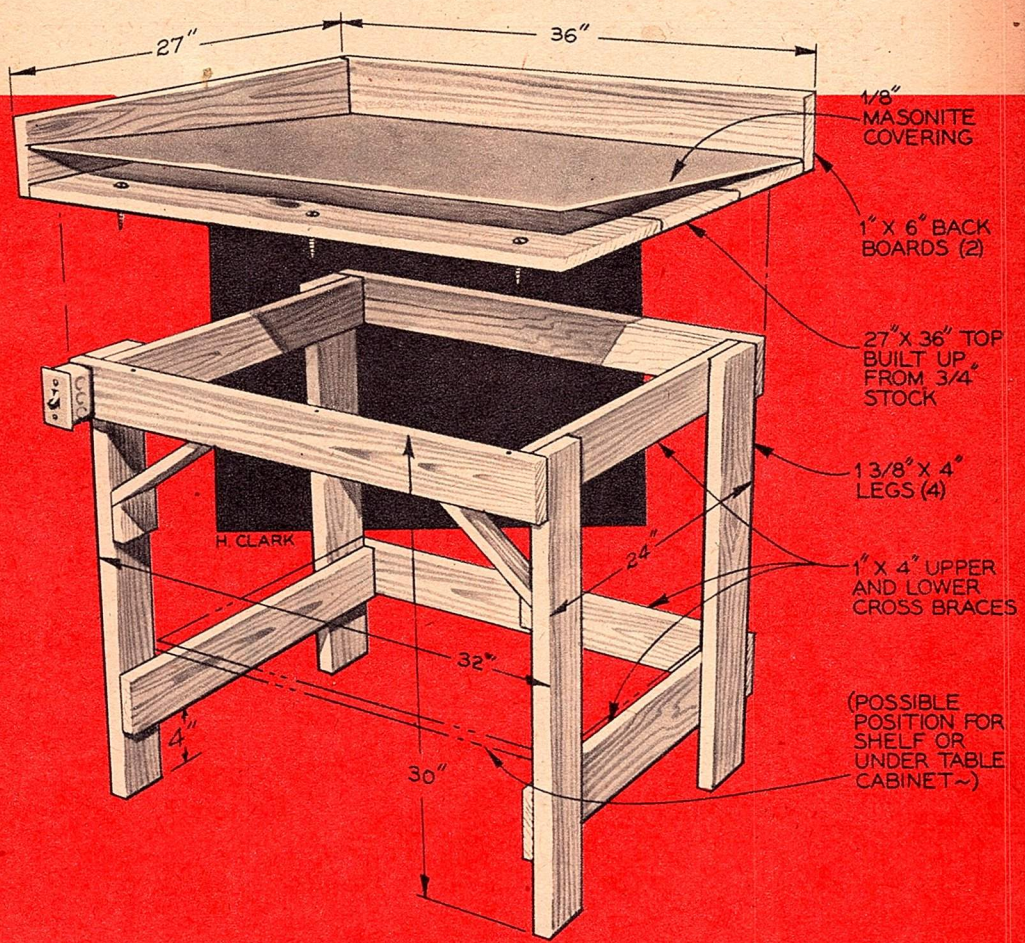
If you plan to make any big enlargements or if you are in the habit of using small portions of your negatives it might be wise to attach your enlarger directly to the top of the table. In doing this, you can move your enlarging easel around freely and for extra large blow-ups you can dispense with your easel entirely and just use the table's top, pinning or weighting down the corners of the paper. Make sure you have enough headroom for big blow-ups. •





Right: Wiring circuit for enlarger switch includes two junction boxes, a double outlet switch, short sections of BX cable and a plug from enlarger.

The diagram to the left shows the simple wiring plan and switch and double outlet box locations.



The Amateur Telescope Maker's Page

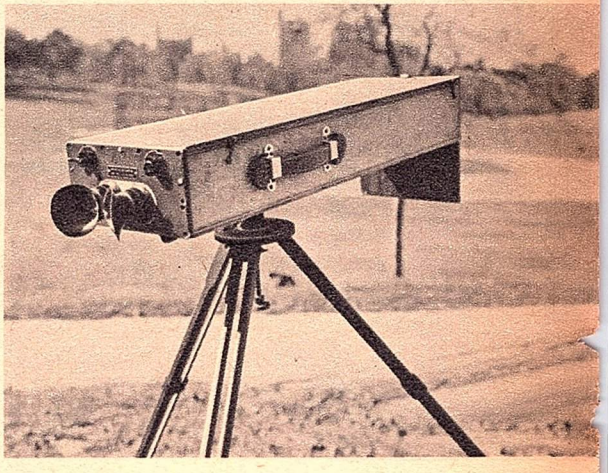
A Binocular Telescope

ORDINARILY the construction of a binocular telescope presents considerable difficulties to the amateur telescope maker. In addition to the elements that go into the construction of a simple terrestrial telescope, objective, erector and eyepiece, we are confronted with the problem of interocular adjustments, parallelism and collimation. However, the extra work spent on a binocular pays off handsomely in results and especially in the comfort of observation. A view is especially enhanced due to the stereoscopic effect of a binocular instrument.

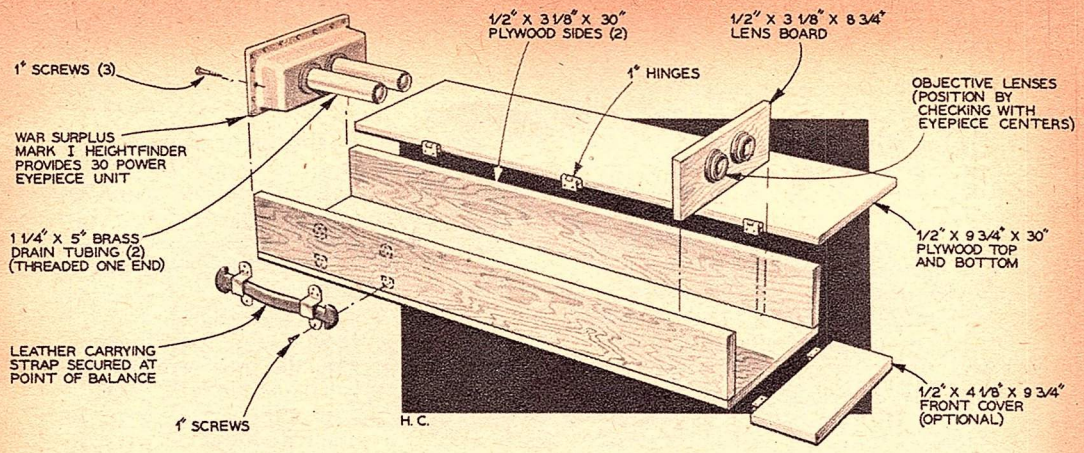
The idea of a binocular instrument never entered my mind until I came across a Zeiss telescope binocular in a Manhattan optical shop. This instrument, about 24 inches in length and with a magnification of 30x, was so superior to the ordinary monocular telescope that I decided to purchase it immediately, but $500 was far above my modest means—I decided to construct one.

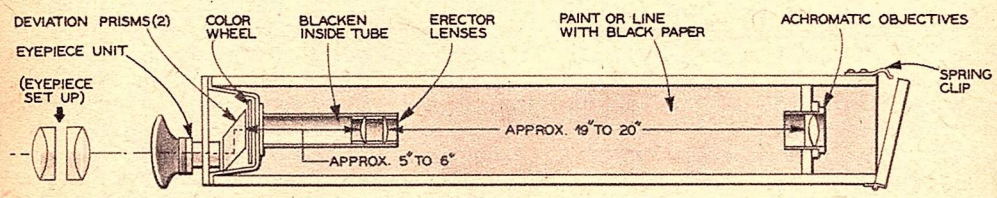


This binocular telescope can be used for celestial work as well as for terrestrial observation. Because of the stereoscopic effect obtained with binoculars vision, distant views are especially lifelike.



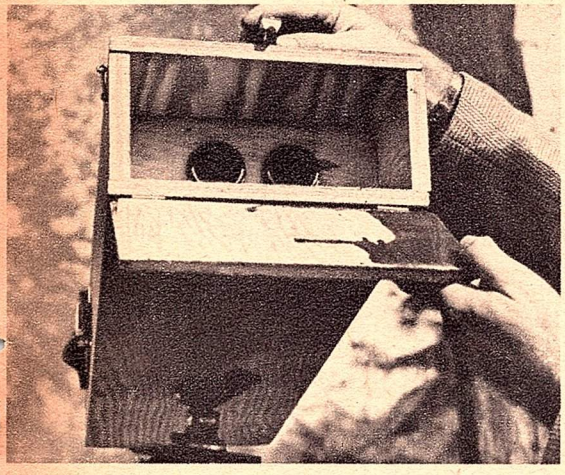
The finished instrument mounted on a camera tripod. A rigid support is a prime requisite for good seeing. To assure steadiness, mount telescope as close as possible to the tripod head.



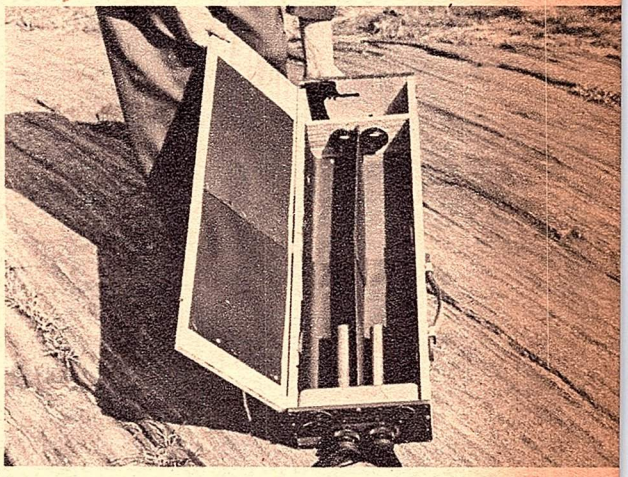


The first thing I did was to start a thorough search of the war surplus optical houses. Various optical parts can sometimes be purchased at ridiculously low prices. The shop owners do not always know what they have or what its value is. It is up to the amateur telescope maker to take advantage of his optical knowledge and recognize a piece of optical equipment from a piece of junk.

The Colombo Trading Co. in lower Manhattan happened to have a load of Height Finders, Mark 1, on hand. I was told to "Go ahead pick out what you want from this junk." The Height Finder was originally a $30,000 [*Continued on page* 192]



The extended rear of the telescope box forms a sunshade for the objective lenses. During transportation, the hinged lid is folded up to protect the objective lenses from dust and scratches.



Inside view. The interior of the box should be painted dull black or lined with black velvet. Hinged cover facilitates final collimation and adjustment. Note handle at side for carrying.

[*Continued from page* 128]

find the car going out of control on the straightaway because the tires don't have sufficient traction. That's three of them. What about the other three?

One of these lesser known hazards is the power skid, something owners of cars with flash getaway ought to guard against. It happens any time the driver gives the driving wheels more power than their tires can take, but is likely to be most troublesome in the lower gears. This is especially true where the car is equipped with an automatic transmission or a torque converter but not so much with simple fluid drive or with fluid drive and a semi-automatic transmission. As a matter of fact cars with the latter two types of transmission, if used with a moderately powered engine, may have some advantages over conventional drive so far as preventing power skidding is concerned.

You usually see power skidding when cars take off in traffic where the streets are slippery, their rears often waltzing right over to trip each other. It explains why a car will sometimes turn right around when going straight ahead. A common cause of such misbehavior is application of sudden power when kicking down on the accelerator to get into a lower high or second or underdrive for passing. Keeping in conventional, if the car is equipped with overdrive, will help prevent this kind of skid.

Fifth is the cornering skid—the kind that results from going around curves faster than the tires permit. Stunt drivers get around this by locking the wheels, quickly skidding around the curve, and then going straight ahead before the car has a chance to slide off the road. They outwit centrifugal force. I know a lot of smart drivers but only one who can do it. Just a trick, and dangerous, but helpful on paper in understanding why a cornering skid can be so insidious. In my personal experience some tire chains needed special watching on curves because their cross-over chains acted like rudders. Earlier Committee tests show an increase of about 16 per cent in cornering speed with reinforced type chains, but in the 1949-1950 winter report tire chains were not used for cornering tests. Interesting is the Committee's statement that, "It is doubtful whether chains on the rear wheels would increase the cornering speeds beyond that obtained with the best tire by an appreciable amount since the maximum speed would be limited by the ability of the front wheels to resist skidding." The previous Committee found that chains of the reinforced type on all four wheels would make possible a 57 per cent increase in cornering speeds compared to bare tires.

The steering skid is the sixth. And what a dangerous article it is! You go into a curve, cut the front wheels in the direction you want to turn and find the car is going straight ahead. In this sort of thing the front tires are doing the skidding. Especially likely to be trapped are those motorists who think it is safe enough to have bald tires on the front wheels if only they have good treads on the rear. But the steering skid can develop in other ways such as through too much weaving in and out of traffic lanes. This throws the car out of balance and forces it to pivot from the front end. If, through lack of good front-end alignment or from overloading of the rear, the car has a tendency to wander, there may be skidding from too little front tire traction. Remember this if you have been lured into putting bags of sand in the luggage compartment on the theory that you'll be so much safer with more rear wheel traction.

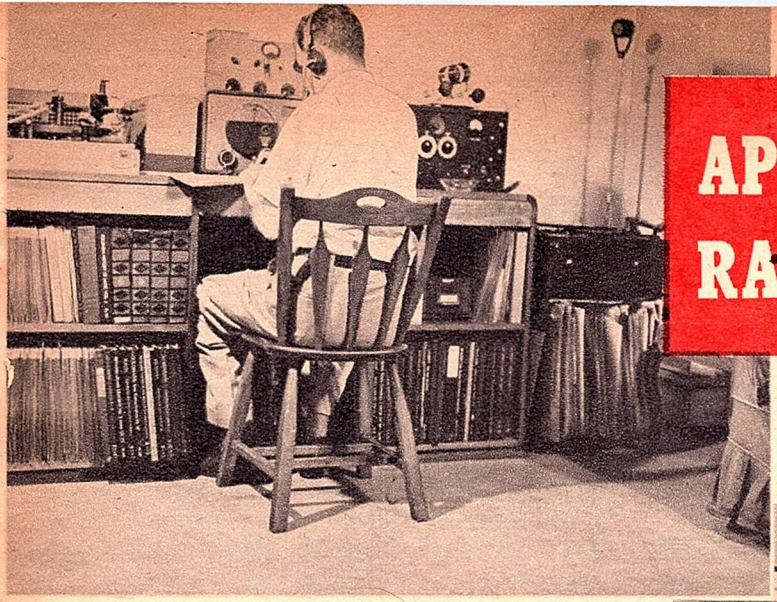
Once you know what kind of skid the car is kicking up the next step is to know how to control it. Take the ordinary right or left slue, for instance. If the car is light, be a little careful not to twist the steering wheel too fast or too far in the direction the rear end is swinging. If you overdo it the car will correct itself pronto and then surprise you by swinging the other way. Such a counterskid will catch you way off base.

There's good news in that the fluid couplings used for the automatic drives help check accidental stalling of the engine if the driver applies the brakes too hard in trying to stop. With a conventional transmission a stall has the effect of additional braking which may be just enough to throw the car into a skid. Cars with any of the newer transmissions do lend themselves to better control during the process of stopping when on icy roads.

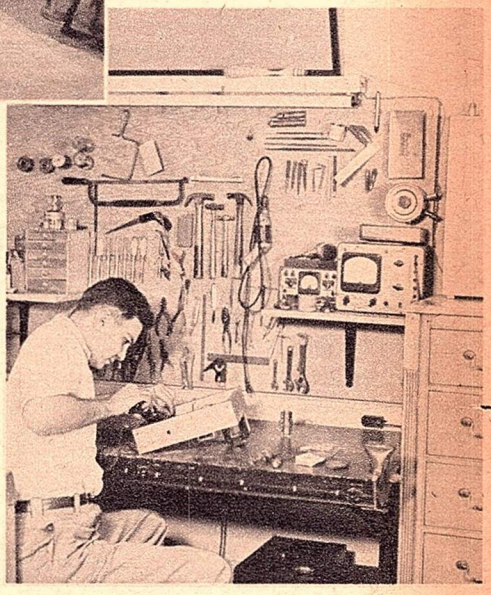
When hydraulic four-wheel brakes came into the picture it was not difficult to demonstrate that a car could be stopped with less chance of a sliding skid if in neutral, assuming all brakes were in perfect condition and the tires were of the same traction capacity, but since conditions seldom are so ideal the practical driver prefers to have power control at all times. Often he can bring a car out of a skid by keeping the wheels turning under power. Just as soon as a wheel stops while the car is in motion things are out of control. That is why braking should be in installments during deceleration—dabbing the pedal as we say. Cautious pumping prevents the wheels

[*Continued on page* 186]

APARTMENT RADIO SHACK



Desk in living room, left, holds the transmitter, records, etc. Below: After shifting furniture, bench was installed in bedroom.



THESE days many hams feel that they haven't the facilities to do much construction. Sure, you can drag out a card table and do a simple job in the living room, but how can you do any heavy work if you live in a city apartment?

Well, I have at least one answer. I live in a three-room apartment in midtown New York City. There's a living room, bedroom, and kitchen. But in this apartment I have constructed, to date, a fancy 60-watt rig, a bunch of intercoms, a complete disk recording system and other items too numerous to mention.

In addition, I have permanently set up a king-size receiver, a transmitter with antenna-tuning [*Continued on page* 184]

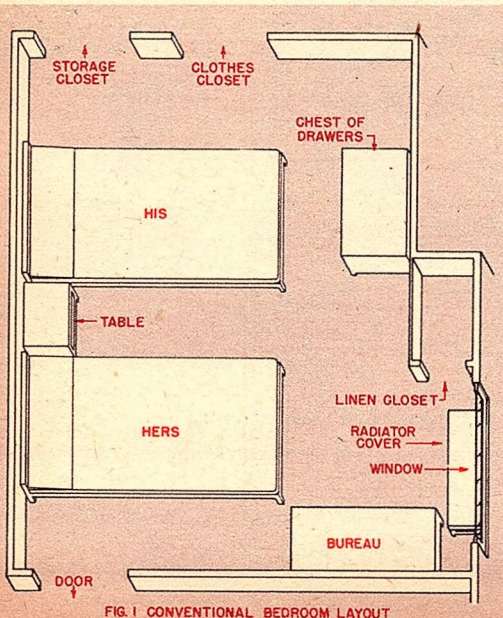


FIG. 1 CONVENTIONAL BEDROOM LAYOUT

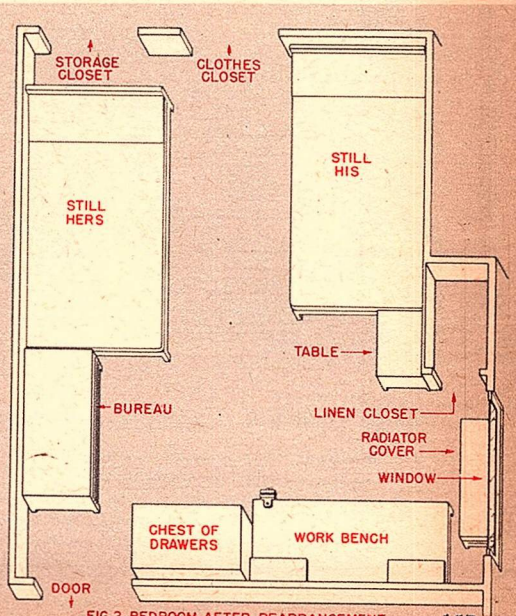


FIG. 2 BEDROOM AFTER REARRANGEMENT

Announcing *Ultramodern*

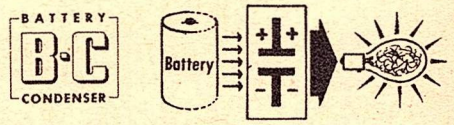
. . . with the versatile new Kodak Ektalux battery-condenser system

You'll find features galore in this sensational new lighting system for flash photography. Kodak Ektalux Flasholder, the basic unit, can be used alone, or with as many as six Ektalux Extension Units in perfect synchronization—B-C power from the Flasholder supplies all the energy.

Addition of the new Kodak Ektalux Solenoid permits you to use the accessory Remote Release for exposure control at a good distance from the camera.

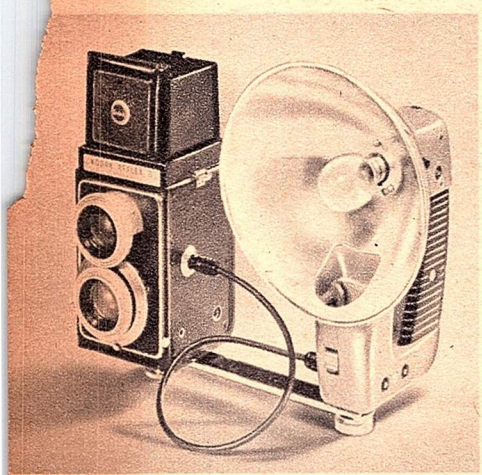
And for cameras that have non-flash shutters, you get a complete external synchronizer by adding the Solenoid and Synchro-Switch to the basic Flasholder. Choice of brackets permits quick, rigid attachment of the Flasholder to practically any type of camera.

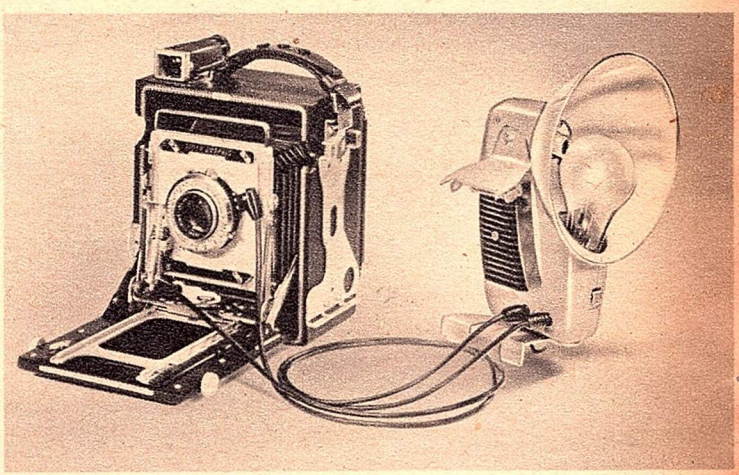
In all cases you benefit by the new pistol-grip handle...the durable, light magnesium construction. Be sure to ask your Kodak dealer to put this versatile Flasholder system through its paces. You'll be amazed.



How battery-condenser power works

The B-C system brings to the Kodak Ektalux Flasholder a revolutionary new power supply. A small 22.5-volt photoflash battery feeds power to a condenser which stores the power until needed. The condenser then fires the lamp in a single surge *15 times as strong* as the force of the usual 1.5-volt flashlight battery. This uniformly high power surge insures flash performance of far greater dependability and scope than is possible with conventional battery operation.





"Ektalux" quickly adapts to amateur or professional cameras

Use with practically any roll-film camera—Standard Bracket fits Ektalux Flasholder to most reflex, folding, or miniature cameras. For cameras that have built-in flash synchronization, no further attachments are required for this new high in dependable "flash" picture taking.

Ideal teammate for press-type cameras—By means of the Press Bracket, the Ektalux Flasholder can be fitted to most press-type cameras. Camera and Flasholder firmly lock together or detach quickly. A special bracket is also offered for the Polaroid Land Camera.

Flash

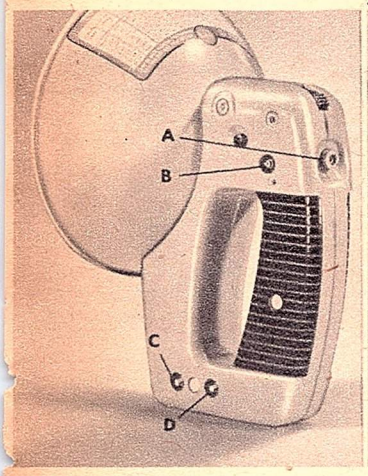
Kodak Ektalux Flasholder

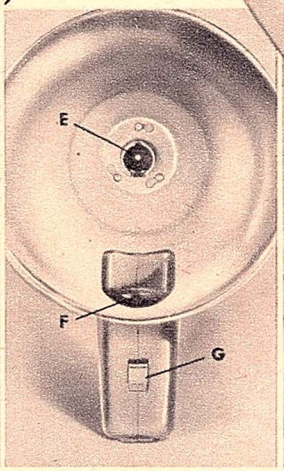
With Standard Bracket..... $34.75
With Press Bracket..... 39.50
With Bracket for Polaroid Land Camera..... 35.75

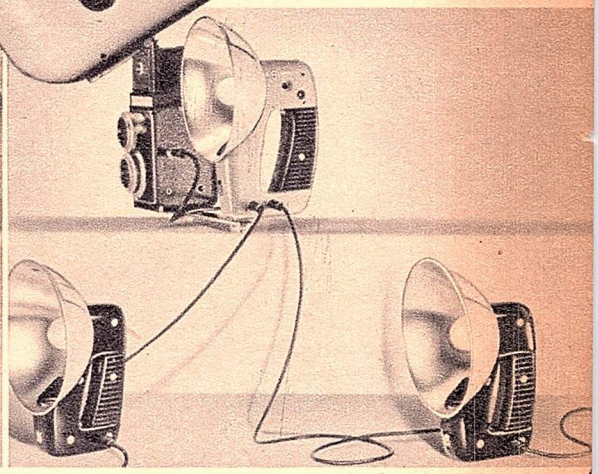
ACCESSORIES EXTRA

Prices are subject to change without notice and include Federal Tax applicable when this advertisement was released for publication.









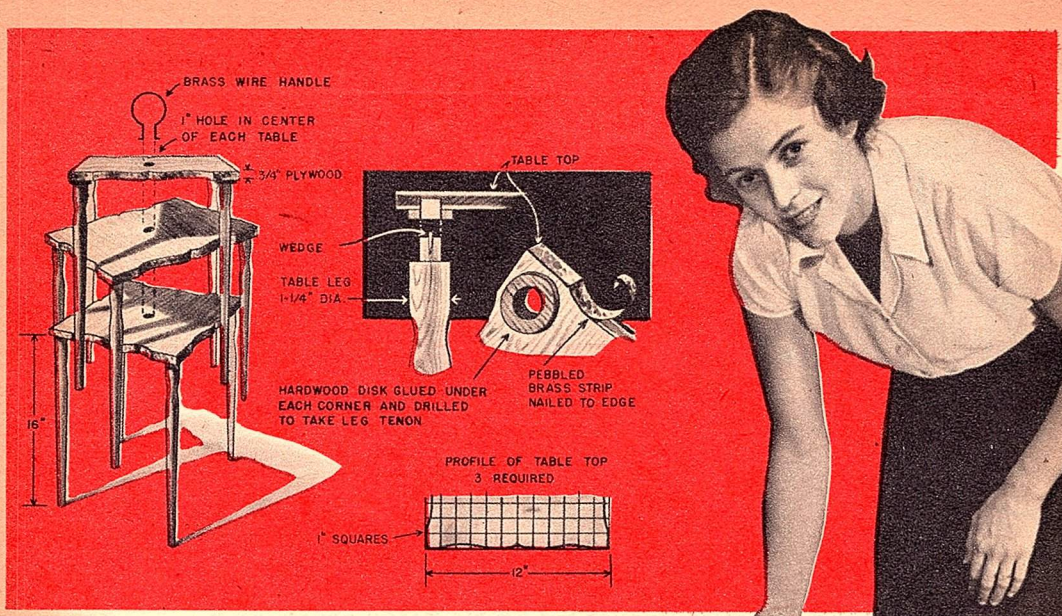
Accessory outlets are handy—Button **A** is Solenoid release that permits tripping shutter from Flasholder. Outlet **B** accepts the Remote Release. Outlets **C** and **D** take Extension Units. The entire system is series-wired.

Lamp system is flexible—For midget lamps, note socket **E**; provides for two-way focus. Ejector is in back. **F** is socket for medium-base lamp, with its ejector **G**. A handy exposure table is on back of reflector.

Outstanding choice for multiple flash—Extension Unit cords may extend to either side of the camera. Each unit can then be hooked to another unit. Units stand steady on flat surface. Socket in base fits tripod or Clamp. Removable reflectors nest; handles stack for storage.

EASTMAN KODAK COMPANY,
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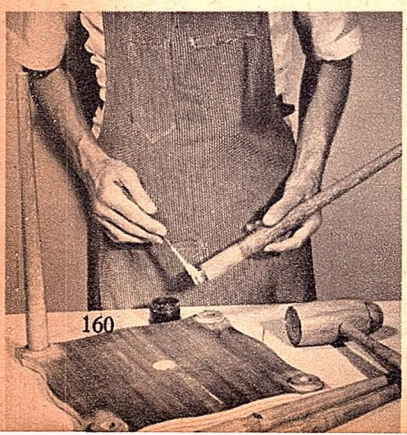
TV Tables

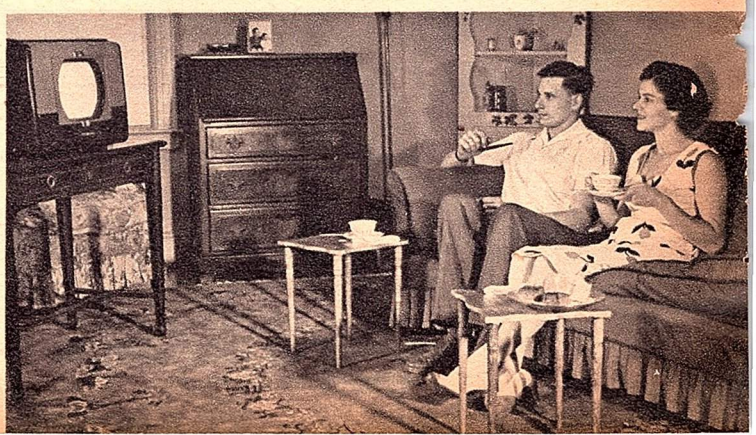
A set of nested, knee-high tables is handy when company comes to watch television. By means of a novel arrangement, the tables when nested, can be picked up and stored. A hole is drilled through the center of each table top. When the tables are nested one upon the other the holes are in alignment. A double-hooked handle of springy wire passes through the holes. When its arms are squeezed together it will go through the holes, when released they spring apart and make it possible to lift the tables by means of the hooks.

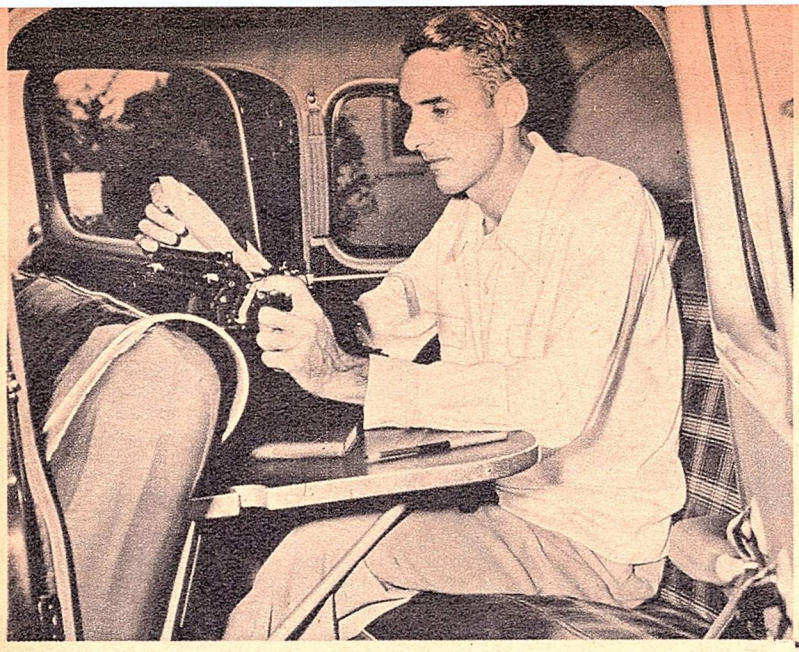
To make the handle, use ⅛-in. thick brass wire and shape it around a rolling pin. After it is [*Continued on page* 187]

Hardwood disks are glued under each corner to take the leg tenons. The ends of each tenon are sawed to accept a wedge for a forced-tight fit.

Above: The tables are kept neatly stacked together for storage. Below: In use, the tables are handy for holding snacks and drinks while watching TV.







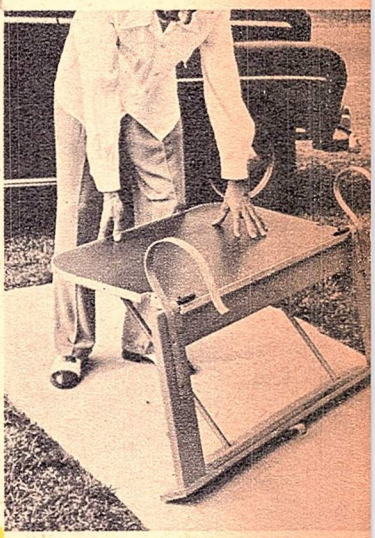
Auto Office

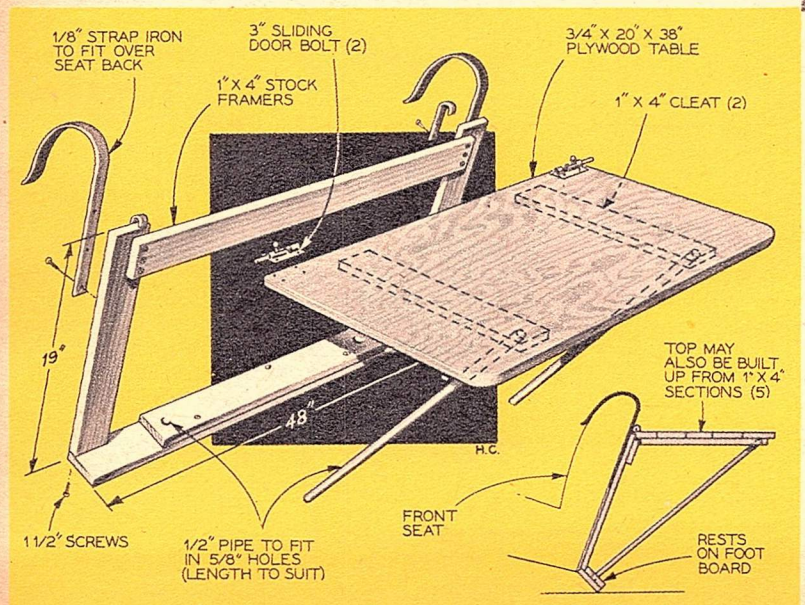
By George X. Sand

Right: Completed unit is sturdy enough to support an upright typewriter. Note that corners of the table are rounded off.

BACK-SEAT writers, as well as vacationists and businessmen, will appreciate this device that converts any sedan into a mobile office. For the top, use a plywood panel or five lengths of 1x4 cut to size. Note that the bottom plank of the suspension assembly rests against either the floor or the foot rest that is usually part of the front seat. My own car has a rest that is tilted about 45° so you'll notice that the suspension unit was designed to fit at a corresponding angle.

Begin by making the support assembly. Connect all joints with screws and glue. Then attach the cleats to the underside of the table. Bend strap iron hooks to shape from two 28-in. lengths of 1 3/16-in. material. Fashion bolt sockets from the same stock. The length of each socket is about 8 in. Next drill holes for the ½-in. pipes that will support the table. This completes the construction, aside from attaching the bolts. Paint the entire desk unit, including metal fixtures. You may want to add linoleum and stripping to the top, but such refinements are of course optional. •



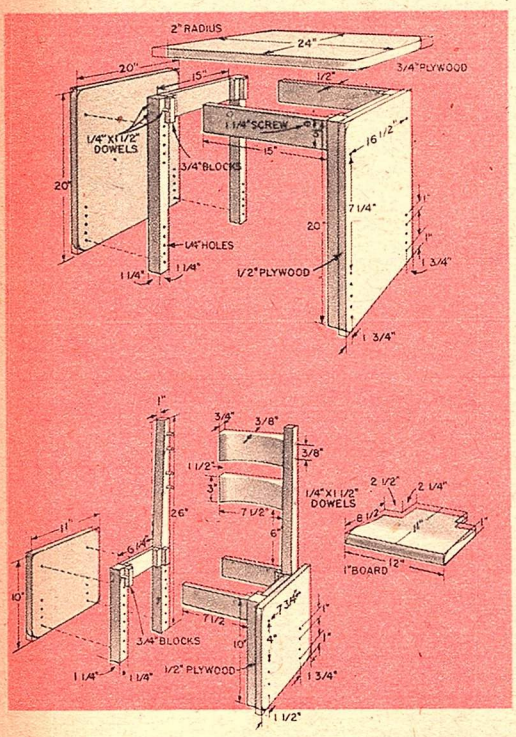


Above: Over-all view shows position of strap iron hooks and sockets for sliding bolts. The hooks are sufficiently wide to avoid cutting into upholstery. Width of top and length of pipes are dictated by space and height limitations of the individual automobile.



Posture-Correct Furniture

JUVENILE furniture becomes obsolete and uncomfortable very quickly because of the changing proportions of the growing child. These units solve the problem, for they are adjustable and grow with the individual. Heights of both the working surface of the desk and of the chair seat can be increased by removing the retaining screws, raising the necessary parts and reinserting screws at the desirable level.—*Ivan Stoppe* •



Drop-Leaf Table

[*Continued from page* 110]

3-in. material are cut to length and the two side pieces notched to receive the slides. Glue all joints and assemble with counterbored screws. Next, cut the four slides and six guide pieces of 1x2 and mount into the frame, spacing them so that the slides work freely. Note that the slides protrude ¾ in. Plane about $\frac{1}{32}$ in. from the height of each slide, and cut the two slide retainer plates of ¼-in. stock. Drill ¼-in. holes where the ends of the screw slots will be and cut between them with a coping saw to make slots. Mount the plate to the slide guides with ½-in. wood screws without gluing. Install the slides with a No. 10 roundhead screw and washer through the slot, ½ in. from the inside end of the slide. Sand the edges of the slides to prevent binding and rub them well with paraffin before your actual assembly.

The uprights are cut 25¾ in. long from the 10-in. stock, and are screwed to the sides of the frame. Attach the spreader bar.

The feet are best cut to shape on a band saw. However, making straight corner cuts and rasping to shape is satisfactory. The underside can be cut out by clamping both feet bottom to bottom and boring a 2-in. hole to coincide with the end of the cut. Finish with saw, chisel and wood rasp. Mount these to the uprights with 3-in. flathead screws counterbored to a depth of 1 in. Short dowels are mounted in the side of each upright to provide a leaf stop.

The 19-in. plank is now cut into three 38-in. lengths for the top and leaves. Mount the top directly onto the frame assembly with eight wood screws counterbored 1 in. Fasten securely and tap in the dowels; sand flush. "Wear" the corners at this point for the antique look.

Cut the corners off the leaves at a 7-in. radius as shown and mount them with 2½-in. hinges of the removable pin type to facilitate removing leaves for finishing, etc.

Sand entire table to a final smooth finish and apply a coat of maple oil stain. Allow to set three to four minutes and rub off to dry.

When this stain has dried thoroughly, apply a coat of warm spar varnish of good quality. Sand lightly when dry and apply a second and final coat, striking off carefully. Allow to dry for a week and then rub entire table with pumice stone. Use a piece of felt moistened in water as a pad. Dip into the pumice and then rub with the grain. Very little rubbing is required to obtain a satin finish. Wipe excess off often to observe your progress. Do not overrub. Complete the job with one or two coats of paste wax. •

Double Bullet On Wheels

[*Continued from page* 84]

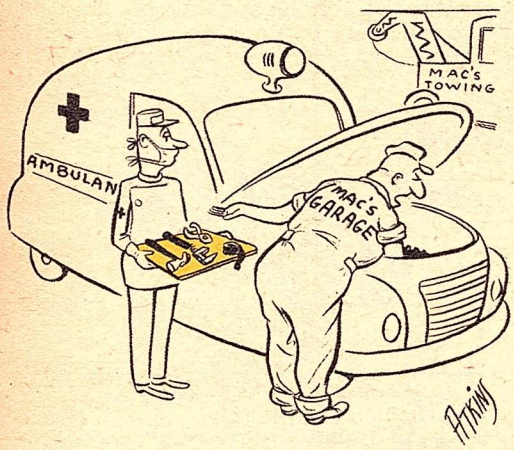
to take advantage of prevailing wind conditions.

There had been almost insuperable engineering and financial handicaps to overcome before the vehicle was ready for its trial. And now, on this ancient Roman roadway stretching like a narrow ribbon through the Pontine Marshes, Taruffi was going to try to better the world's record for sports cars in the two-litres class. The record was held by Britain's Goldie Gardner who, the year before, had rolled up the incredible speed of 284.470 kilometers per hour in an MG.

Mechanics poured preheated oil into the Maserati motor, Taruffi donned his white helmet and climbed into the cockpit. He grasped the rudders that took the place of the steering wheel and drove to the starting line. The first two laps were warmups. On the third, coming downwind, he zoomed like a silver streak past us. The timer announced that he had done a breathtaking 313.588 kilometers per hour.

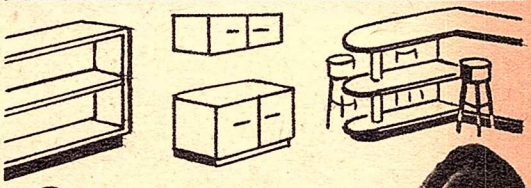
The upwind leg was slower. But the average, necessary in fixing the official time, was 298.507 kilometers per hour, or approximately 185 mph. Taruffi's double torpedo had broken Gardner's mark by better than 14 kilometers!

"The importance of my car," Taruffi told me after the race, "is that it embodies many new principles that will become standard in automobiles ten years from now. It was important, also, for me to prove in a controlled test that my design is feasible because I wish to get financial support to build another, larger double-torpedo—one powered by a four-and-a-half litre Ferrari motor—for entry in your Indianapolis classic." •



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Roll Not The Barrel

[*Continued from page* 124]

available with cords, plugs and permanent needle, ready to be hooked up to any amplifier. The amplifier described in this article uses three miniature tubes and will yield excellent performance. A wooden spigot, some small pieces of ¼-in. plywood and a few hardware items will complete your material list.

Before proceeding with the construction, the keg must be glued together. To do this, simply remove the hoops on one end and the staves will spread enough to permit glue to be applied to all joining edges and around the head. Replace the hoops, turn the keg over and repeat the operation. Be sure to align the heads so that their grain runs in the same direction. A small nail driven in the head will help to handle them during the gluing process. If the hoops are driven on tight with a block and mallet, no other clamps will be needed. Allow ample time for the glue to set as there is considerable stress developed in the wood. Next remove the hoops and smooth up the uneven joints with a plane, then sand the whole keg smooth.

The cradles are cut from ¾-in. stock and are fastened to the bottom section with screws driven from the inside. Use rubber-headed tacks on the bottom for table protection.

Now fasten cleats of ⅜x¾-in. stock around the inside of each section to receive the panels. The lower panel should be recessed about 1¼ in. and the upper ¾ in., or just enough to clear the pickup arm when the player is closed. The panels are cut from ¼-in. plywood. Trim a piece of cardboard until it fits and use it for a pattern. The cutout for the changer is made in the lower panel with a jig or coping saw. Be sure to allow clearance for all moving parts during the changing cycle. Drill three 1-in. holes in the keg below the turntable motor to provide ventilation.

There will be some unused space at one end of the lower section and this should be partitioned off with plywood to form a storage compartment for the power cord. Drill a 1-in. hole through the head of the keg into this space to receive the spigot. A notch filed in the edge of this hole will allow the cord to be clamped in place at any desired length. For traveling, the whole cord may be pushed in and the spigot replaced. A couple of saw cuts in the end of the spigot to hold the plug will keep it from getting lost inside. The 110-volt wires and the phone lead, lead to chassis-mount type receptacles at the rear of the panel so that the two halves may be easily separated for service. Now hinge the

[*Continued on page* 168]

Miniature Rolls Royce

[*Continued from page* 122]

cowl from ¼x⅛-in. material and glue in position.

Headlights are turned from brass and are chrome-plated. You may also make them from wood and paint them silver. Attach to the fenders with small bolts. Fog lights (154/61) are made in a similar manner. The front and rear bumpers were built up from ¼-in. o.d. brass tubing, which was cut longitudinally. Rear bumper is fitted into two $\frac{1}{16}$-in.-diameter pegs that fit into holes drilled into the rear edge of the platform. The front unit is fitted with two small bolts that pass through the plate holder section and into the flange of cross member 154/2.

File the door handles from brass, and fit by pushing into holes in the doors on your final assembly. The division (154/56) is built up from balsa, and thin plate glass is glued into a slot provided for it. Cover balsa with walnut veneer.

The dashboard (154/58) is built up from walnut veneer to fit the body. Mark dials and glue them in place through holes bored in the center panel. The steering wheel is constructed from a brass ring with spokes cut from sheet brass, and is mounted on a $\frac{1}{16}$-in.-diameter shaft. The front and rear seats are shaped from balsa.

In finishing, rub down all woodwork with very fine sandpaper. Apply your first coat of paint with a fine-bristled brush about ½ in. wide. Build up several coats, allowing each one to dry thoroughly before attempting a new application.

To complete the model, mount a Motoy motor (1/2000 hp) as shown on page 119 and connect to six Eveready AA batteries which are fitted under the body or the luggage compartment. Place a toggle switch in a convenient place, and your Rolls is ready to roll up real thrills. •



Build your own 12-in. replica of one of the most popular foreign cars on the road. The full-size plans include photos and complete instructions. For your copy remit 50 cents to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Conn. Plan No. 423.

Morris Minor

[*Continued from page* 93]

look a little silly in a green light acceleration skedaddle against an Olds 88 or a Ford 6 but in its own class it would do all right. Zero to 30 averaged 8.7 seconds and zero to 60, which is almost peak speed, took 39.2. Actually, top speed proved to be between 64 and 65 miles an hour, honest, which is a lot faster than you can do on a bicycle, Buster.

As in all cars of this size and with similar size power plants, you have to do a lot of rowing with the gearshift lever to keep the Morris up with the high-speed, big car cruisers on the highways. When hills are encountered, reduced gears are as necessary as the funny papers on Sunday morning. If the grade is really long and steep you will have to rely on your fast downhill ability to catch up to the pack, once you are over the crest. If you are a one-car owner I certainly would not recommend this or any other low torque car for the mountain states. But if you live in the semi-flats and are interested in comfortable and economical transportation, plus extraordinarily fine handling, this is it.

Over here in America where 600 miles in a day is common travel, I feel a big-engined car is the ticket. I believe the Morris Minor is an ideal second car for shopping and making semi-local runs, for which use it is far superior to a ballooning Detroit standard sedan as it handles and parks so much more easily. And when the traffic really gets gruesome, you can make a lot better time from here to there by worming this doodle bug in and out like a snake. The Morris should also prove a good buy for the thousands who live in large cities like New York and seldom use a car except for driving 25 or 30 miles to the country club on Saturdays and Sundays. For this type of use the upkeep would be peanuts, figuring the hatful of gas you'd burn each week-end and the lower (in some areas, anyway) garage rent you'd have to pay.

In summing up, if the Morris Minor fills your particular automotive bill I highly recommend it. Service and parts are available in all of the 48 states. Last but not least, it's a real thrill to drive. If you have never driven a fine steering, road holding car it will give you a boot you won't forget. Briggs Cunningham has what I believe is the world's finest private collection of modern automobiles, ranging from his own great Cunninghams to Ferraris, Bugattis, Mercedes, Bentleys and many more. The last time I saw him on the highway he was tooling along in his Morris Minor looking as happy as a clam at high tide. However, maybe I shouldn't mention that Briggs installed a blower on his. •



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BOWES "SEAL FAST" CORP., INDIANAPOLIS

Lo, The Poor Moose

[*Continued from page* 96]

has taken some but by no means all of the sting out of moose hunting. By means of this rapid, effortless means of getting in and out of the big woods, you can transport your moose in a number of trips to the nearest railway. Then, after a reasonable passage of time and the payment of an unreasonable bill for freight charges and cold storage, you have a home freezer crammed with meat. By the time you have reached this stage of the procedings, however, there's every chance that this meat has cost you the equivalent of a similar weight in filet mignon.

Four friends of mine made a trip into the bush last fall, each of them armed to the teeth and each of them having visions of a spreading rack of antlers over his fireplace. Either as the result of poor shooting, poor vision or poor guides, only one member of this quartet had the honor of bringing down this monarch of the forest. He shot this creature about two miles from camp and it took him the entire day to carry back the meat and the antlers. Shortly after the four returned from this wilderness junket I had lunch with one of the unsuccessful hunters.

"You know," he confessed, "prior to that moose hunting trip I always considered George to be a rather selfish individual. But he sure proved me wrong on that trip. He was the only one to get a moose but before we left camp he called us together and assured us that we didn't have to worry about going home empty handed. He divided the moose into four equal portions. That is what I call real generosity."

I said nothing to disillusion him but you can draw your own conclusions as to the emotion that prompted the successful moose hunter to share his booty. Instead of facing the prospect—and the reality—of lugging 800 pounds of meat over several miles of rough trail between waterways, he had only 200 pounds to worry about. This generosity obviously was mixed with good, sound common sense.

Most of the Canadian provinces, aware of the fact that the moose hunter often shoots in haste and repents at leisure, have laid down regulations to the effect that game must be transported out of the woods reasonably intact. Unless you are going to remain in the bush for quite a while, you will make very minor inroads on a moose and provincial officials are inclined to frown on the hunter who considers that "reasonably intact" is covered by the loin and one quarter.

Deer hunting or even black bear hunting is not an especially hazardous form of outdoor activity unless you fall down a ravine, try to kick a porcupine out of the tent in your sock feet, or hunt with a companion who is inclined to shoot at anything that moves. There are few recorded instances in which a whitetail ever charged a hunter, even when wounded.

A moose, however, is something else again. Since the best hunting falls during the rutting season when the bull moose is spoiling for a fight or a love affair, he is inclined to be somewhat irritable. Anything that moves within the range of his vision, which is poor, or his sense of smell, which is acute, he considers to be an enemy. A number of unsuspecting moose hunters have literally been run ragged by an angry moose, especially when that moose has been lured by a call and is under the impression that his might is being challenged. The guide doing the calling usually is a quick man on his feet. And being unencumbered with anything other than a birch-bark call, which is expendable, he can climb a tree or take to his heels. As a head-on shot rarely drops a moose in his tracks, a few novices get severely trampled each season. This number is small, however, compared to those who acquire hernias, strained backs, and a permanent crouch as a result of carrying their moose back to civilization.

Not long ago I ran into a successful but happy moose hunter. This man had returned from a Quebec hunt with a really impressive rack of antlers. When I asked him how he was making out on a diet of moose meat he only smiled.

"I had a very unfortunate experience," he explained. "On the third day I managed to kill a really big moose with an imposing rack of antlers. We were a long way from camp so the guide quartered the moose, hung most of it in a tree and we carried only the tenderloins and the antlers back to camp. Three or four days later, before leaving for home, we went back to get the meat. A horrible thing had happened and I felt terrible about it. Bears had gotten at the meat and we couldn't salvage a bit of it. I took several photographs to show the authorities to make certain I wouldn't be accused of leaving good meat in the woods."

I've been somewhat suspicious of this individual ever since. It's been my experience that bears in the deep woods are inclined to shun anything which has the slightest scent of man. When forced to leave game hanging for any length of time, I've found it extremely effective to tie a handkerchief or a strip of cloth to the meat. On occasions I've seen the

[*Continued on page* 173]

Electric Drill

[*Continued from page* 143]

seems to be a desirable amount of power and gives ⅛ hp. at the shaft. A smaller motor can be used satisfactorily and a larger motor up to 500 watts will make a correspondingly more powerful machine. In order to get a satisfactory speed for sanding and drilling, a five or six-to-one gear reduction is necessary.

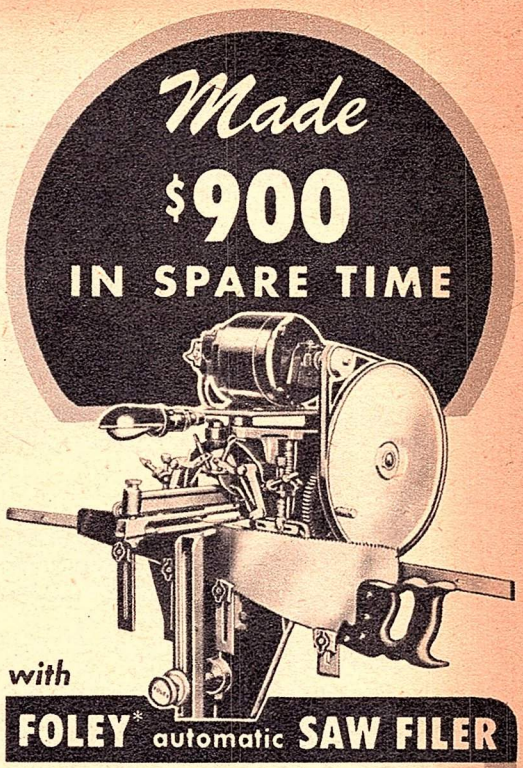
The drive on this machine is through two Singer sewing machine V-belts approximately 15½ in. long, used in parallel and running in double-groove pulleys. The motor pulley has an outside diameter of ⅝ in. and the spindle pulley has an outside diameter of 3⅜ in. If a 400-watt motor is used, three belts should be used in parallel with triple-groove pulleys.

Both pulleys on this machine were turned from mild steel. The motor pulley is tapped with a No. 12-24 thread and screws directly onto the stub shaft of the motor. If a sufficiently large piece of free-machining steel or aluminum is not available for the large pulley it can be made quite readily from a piece of maple or cherry. The spindle of the machine is ½ in. in diameter and threaded on the lower end ½-20 to take a nut fastening the large pulley to the spindle. One inch of this threaded section extends beyond the nut. The sanding disk, polishing pad or drill chuck screw directly onto this section.

The spindle bearing housing was machined from aluminum bar stock and has a bronze bushing top and bottom. The bearing diameter is ½ in., the bushings are approximately ½ in. long. The spindle is held in its housing by a ⅝-in. diameter washer and a machine screw threaded into its top end. A wooden knob over the top of the housing covers the screw and retains the lubricant. The motor and spindle are both mounted on a frame cut from ¼-in. aluminum plate; ⅛-in. aluminum would be plenty stiff or $\frac{3}{32}$-in. steel would be a satisfactory substitute.

The motor mounting bolts fit through slots in the frame plate, allowing adjustment for the belts. A handle and switch combination was made from a 1¼x⅛-in. aluminum strip with grips carved from cherry. The large part of the interior grip is hollowed out to give room for the switch mechanism. The switch selected in this case is a commercial one that is pushed once to make contact and released; again pressed to open the circuit.

The 330-watt motor of this machine turns a 7-in. sanding disk and will drill holes up to ¼-in. in steel. When polishing, a five-inch pad seems to be the desirable size. Lubricate spindle assembly with light cup grease. The space between the two bushings acts as a grease reservoir.—*Robert M. Ramey* •



* *Trade Mark Reg. U. S. Pat. Off.*

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Roll Not The Barrel

[Continued from page 164]

sections together, using one sturdy ornamental hinge in the center. Attach two lengths of small brass chain to stop the upper section, a few degrees past vertical.

In laying out the upper panel, first determine the location of the hole which provides clearance for the record post, by shutting the lid against the post. A small kitchen strainer, less handle, is fastened over this opening to provide cooling air for the amplifier tubes.

This amplifier circuit is quite conventional and should present no problems even to an inexperienced builder. However, the components must be placed in a rather unorthodox manner to make use of the space available.

The chassis is formed of a 4x5-in. piece of aluminum about $\frac{1}{16}$-in. thick. Lay out the location of the holes directly on the metal. You must also provide holes for the socket mounting screws unless you are using the type secured by a snap-ring.

The $\frac{5}{8}$-in. hole for the 150-ohm, 10 watt resistor (R-9) should be omitted if you are not using the through-chassis type pictured, but since this part will get quite warm, it should be mounted on the outside of the chassis.

Clamp the chassis between the blocks of wood and make the 90° bend as shown. Now mount the potentiometers and tube sockets. If you are doubtful about following a schematic diagram, you can mark all parts with the code numbers shown on the parts list (C-1, R-9, etc.) before starting. It will also help to mark each connection off with colored pencil on your diagram as it is completed.

First wire the filaments, merely omitting the leads to the indicator light if you are not using one, and making no connection to terminal 6 of the 35W4. Next make the short connections between sockets and install resistors, leaving the larger components for last. Most of the connections are made directly but I used one small terminal strip located centrally to avoid crowding the wiring on the sockets.

You will note there is only one ground connected directly to the chassis, the others being run to a common ground. One terminal of the switch works out nicely for this purpose. The power cord and the shielded wire from the record changer are run through holes in the wooden panel before soldering them into the circuit.

The speaker wires are led through a small grommet and connected to the larger, or primary wires of the output transformer, which is mounted on the speaker itself. The secondary wires are soldered to the speaker voice coil terminals.

Before trying the amplifier, double-check your wiring, looking especially for shorts between the lugs on the tube sockets. If a hum is noticed, try reversing the power cord plug in its socket.

The amplifier and speaker can now be located on the panel and the holes drilled for the control shafts, speaker and indicator light. Place a suitable grill cloth under the speaker before fastening it in place. For best tone, be sure all parts are solidly mounted. Lining the inside of the upper section with Fibreglas or other sound absorbing material will also help to eliminate vibrations.

A small rubber pad glued to the upper panel above the pickup arm will hold it securely on its rest while the player is being carried. The correct length for this pad can be determined by placing a lump of modeling clay or putty on the arm and closing the lid on it.

Give the wood at least three coats of spar varnish, rubbing lightly with steel wool between coats. If any open grain woods such as mahogany are used, they should be given a coat of filler before varnishing. The keg may be stained before varnishing if you wish, however, the fir will be very attractive in its natural color.

The hoops are sawed in half and fastened in place with ¼-in. No. 3 screws. A carrying handle and suitable hasp or snap will complete the job. A couple of final suggestions: don't shut off the player during its changing cycle. Wait for the arm to return to the record, then turn off the switch and place it on the rest. Always keep a record on the turntable to protect the needle against breakage. •

PARTS LIST

R1—500K ohm potentiometer with switch (Volume Control)
R2—5 Meg ½ watt Carbon Resistor
R3—50K ohm pot. (Tone Control)
R4—200K ohm ½ watt carbon
R5—500K ohm ½ watt carbon
R6—150 ohm 1 watt carbon
R7—1500 ohm 1 watt carbon
R8—51 ohm 1 watt carbon
R9—150 ohm 10 watt wire-wound
C1—.05,600 volt, paper condenser
C2—.006-mfd., paper, 600 volt
C3 & C4—.01-mfd., paper, 600 volt
C5—.02-mfd., paper, 600 volt
C6 & C7—30-50-mfd. 150 volt, midget dual electrolytic
S1—SPST switch
T1—Output Transformer 2000 ohm primary, secondary to match speaker
P—Indicator Light 7.5 volts, 0.2 amps. (optional)
Speaker—4 x 6-in. oval PM
Tubes, three 7-pin miniature sockets, No. 12AT6, 50B5 and 35W4.
Grommets, 5 x 6-in. .051 aluminum for chassis, misc. wire, solder and hardware.

If You're So Smart

[*Continued from page* 104]

flowing in to force Smith into larger quarters uptown.

One day, during his frequent visits to a local summer resort, Smith was attracted to a souvenir stand that sold wood novelties that had "Bridgton-on-the-Lakes" painted on them. Upon further investigation, he found that the items were imported from New York shops. What's more, New Yorkers visiting Bridgton in the summertime lugged the souvenirs triumphantly back to New York.

"Instead of importing these things," reasoned Smith, "why can't I supply the local outlets with stuff?"

He made up a few sample pine towel racks. Then he lettered the name of the local resort on the items. When Smith showed them to the resort owner, he liked the samples and bought them on the spot.

Then, the real break came. One evening while Smith and his son were shooting the breeze around the cracker barrel, they listened to the tall stories related by the local fishermen. Returning home from this bull session, Smith remarked, "Son, I hope some day to catch a fish so big that I won't have to lie about it."

"Why don't you paint that on your signs," asked his son. "I'll bet the old fishermen around here will buy 'em."

Smith painted a few samples and they sold like hotcakes. In fact, the demand for this hand-lettered sign kept the Smiths busy day and night.

Then more breaks came. This time Smith contrived a silk-screen process that would duplicate signs. Soon the Angler's Prayer, "Lord, give me grace to catch a fish too big that even I, when telling of it afterward, may never need to lie," was being run off the assembly line by the hundreds.

The signs began popping up in dens, clubs, diners and recreation rooms. And Smith began adding other signs like "Even a fish wouldn't get into trouble if he kept his mouth shut" to his line. Now he uses about 10,000 board feet of plywood a month for signs alone and his items are marketed in department stores, toy counters, souvenir stands and novelty stores all over the world.

In addition to his fish panels, saucy signs and souvenir items, Smith does special silk-screen assignments. Recently, for instance, he painted original designs on a large quantity of jewelry and silver cases for one of the largest silver companies in the country.

Yes, today nobody can say "If you're so smart, why ain't you rich?" to Albert R. Smith. He is! •

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When Death Takes A Holiday

[*Continued from page* 100]

by a sheet of flame as the gasoline tank exploded. With the plane heeling over on its starboard side, Alkamade dashed for his chute which he had left hanging on a rack. He was horrified to find it a burning mass from the sprayed gasoline. Then, 18,000 feet from the ground—more than three miles—the sergeant closed his eyes, murmured "This is it," and jumped.

Three hours later he opened his eyes. White, fleecy clouds drifted lazily overhead. Was he dead? He turned his neck to the left, then to the right. No pain. He slowly moved his arms, then his legs, then his body. Slowly he rose to his feet and looked at himself.

His boots were gone, his flying suit was in shreds. His eyes moved upwards, then down. Towering above him were some thick pine branches; at his feet was a four-foot blanket of snow. Together they had broken his fall and put him securely in the miraculous escape hall of fame!

There's more to the story: he was taken prisoner by Nazi soldiers, who scoffed at his story. But the German authorities ordered a thorough investigation and Alkamade was given a certificate, signed by a German colonel, attesting to the fact that he had actually fallen 18,000 feet without a chute and lived.

There seems to be a special kindly sort of providence that embraces select people when they are faced with serious falls. In Lille, France, Yvon Dherire was setting tiles on a roof when his foot slipped and he tumbled off. Six stories below was a baby buggy with an infant snoozing contentedly. The mother, seeing the body descending, snatched out the baby, and the tile setter landed completely unharmed squarely inside the carriage. In Washington, D. C., Mrs. Anne McGinnis fell from a fire escape on the fourth floor, hit a clothes line one floor below and was neatly flipped through an open window into a bathroom on the second floor. And in Springfield, Mass., Henry Lefeave, watching a Fourth of July parade from a third-floor window, leaned out too far, lost his balance and dived toward the ground. On the way down he grabbed the top of a flagpole jutting from the building and teetered perilously until he could be hauled through a second-floor window.

World War II had a bumper crop of amazing escapes. But the Korean conflict has had some solid ones of its own, too. Recently, an unidentified GI reported to a field hospital for treatment of a badly bruised nose. His story: a hand grenade lobbed by a North Korean had struck him on the schnoz, then bounced off to explode harmlessly in a ditch by the side of the road.

Then, there was Gary M. Nason of Detroit who was sitting with his back propped against a shack when he heard the chatter of a machine gun. He looked up. Neatly initialed about three inches above his head was a perfect G, for Gary, formed by bullets! He fainted.

With yearly automobile deaths now at the one million mark in this country alone, you wouldn't think that death takes many holidays on the open road. Yet the family bus and its occupants have participated in some hair-raising escapes that even the old Hollywood serials would have rejected as just too fantastic.

Here's how H. W. Lewis thumbed his nose at death last year at Cannon Ball Beach in South Africa. Mr. Lewis was driving merrily along a road carved into the side of a cliff when his car skidded, smashed through a protecting fence and dived over the precipice. He shuddered and closed his eyes. No splash. No descent. No nothing. Warily he opened his eyes and found himself staring at the sea more than 100 feet below. The car was hugging the side of the cliff, headed downward, swaying gently. With infinite caution, Mr. Lewis climbed into the back seat and eased himself up and over the cliffside to the safety of the road. He peered down and saw what had happened—a heavy, gnarled thorn tree was hooked into the rear axle, holding the auto like a giant finger of fate!

Death was looking the other way when a panel truck and an automobile collided on a Milwaukee street in 1949. Sitting on a tricycle in front of his home was five-year-old Douglas Sturomski. The truck lurched toward him and horrified onlookers saw the huge vehicle fall squarely upon the small boy. When a rescue squad laboriously righted the truck they found Douglas and his tricycle whole and safe. Both had been neatly framed by an open window, which was just large enough to enclose boy and cycle.

The kind fate that watched over Douglas was also hovering above Ethel Sheffield, a gal taxi driver of Regina, Saskatchewan, not long ago. Ethel was driving alone one blisteringly cold night in January, with the mercury hovering at 16 below when her cab skidded on the ice-encrusted street and crashed into a lamp-post. Ethel was knocked unconscious. Picture the situation: a deserted street, no passersby, a fearfully cold night and an unconscious woman in the front seat of her cab. By morning she would almost certainly be

frozen to death. But look what happened: a fire alarm box attached to the post was set off by the crash, bringing firemen on the double. Miss Sheffield was speedily revived and went home, not much the worse for her narrow brush with death.

Jesse Spitzer of Denver made his escape the hard way—he got himself involved with a car and a railroad train and still got off almost scot-free. Mr. Spitzer was hurled through the roof of his car after an accident, landing on the train tracks just as a speeding locomotive rushed down on him. After the long string of freight cars passed, there lay Mr. Spitzer, uncrushed and almost unharmed. He had rested securely in the track bed as the train whooshed over him. His injuries? One broken leg—caused by the auto accident, not the train.

Sometimes you don't have to do any active falling or crashing to escape death by a whisker. Henry W. Ridges of a Chicago suburb just sat. Suddenly the entire building collapsed on him and a heavy beam apparently crushed both his thighs. Rescuers watched fascinated as Ridges calmly unbuckled his two artificial limbs and crawled safe and sound from the wreckage.

An unidentified vagabond in Florida was sunning himself on the rear lawn of a tall building when three huge spikes, weakened by a recent storm, fell from the roof and imbedded themselves several inches deep into the ground beside him—one right over his head, two on each side of his chest. All of them missed him by inches.

Even these close calls, amazing though they may be, are pale in contrast to the weird goings-on in the Thuringen Forest on an April afternoon in 1945. Pat Mitchell, top-notch combat correspondent for *The Stars and Stripes,* American Army newspaper, saw the whole thing.

A Nazi 88 struck a Sherman tank of Combat Command B of the Third Army's 11th Armored Division. The shell burst among the gears in the front, sending the teeth flying like shrapnel all around the inside of the sealed vehicle. Pat, who had leaped from his jeep and taken cover in a ditch, says it was like being in a meat-grinder working at high speed, with the added hazard of fire. And fire came as the tank exploded. Yet the three-man crew bailed out, with not one man touched.

And then, Pat continues, the men found themselves out in the open, with no cover of any sort. They lay flat on their faces as enemy fire spattered all around them. When the barrage was over, not one man had been touched!

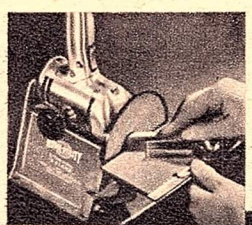
Oops, sorry, there was one casualty. German fire found its mark, completely demolishing a bottle of local brew which one of the GIs had been carrying in his back pocket. •



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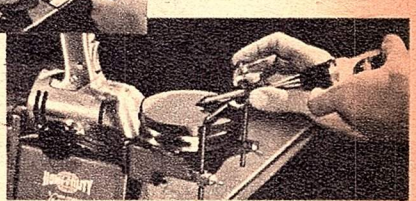
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'52 Packard 300

[*Continued from page* 89]

last year's buyers ordered Ultramatic, their cars would still be offered with a choice of overdrive or conventional transmission, as desired. Macauley said Packard doesn't feel that it has the right to tell its customers what they should or should not have. If you ask a Packard dealer for standard transmission, he doesn't treat you as though you had gone out of your mind. Quite a refreshing switch from another major manufacturer who forces buyers to take the clutchless shift or nothing and then reports that 99 per cent of the customers "demand" automatic transmission.

Packard is also making the big 155-horsepower engine available in its smallest model, the 200, if desired instead of the regular 135-horsepower job. This company believes in treating its customers like free thinking Americans, not like a bunch of prestige buying stooges who will take what they get because they are told to. In case you haven't guessed, I'm against dictators both in the government and in the factory. When I have dough to spend for a car I want to make the selection myself, not be told what I *must* buy.

For my test I selected the Packard 300, which is right in the middle between the smallest 200 and the battleship-size 400. The 300 is powered by a big straight 8 engine developing 155 pretty honest horsepower. The job I drove was equipped with Ultramatic transmission, so any of the times I made could easily be topped with the overdrive unit. It was a lousy day, with wind and rain coming out of the southwest at 20 mph, when I ran the 300 on the Packard track, the world's finest and fastest, bar none.

In spite of the weather, I got a high speed two-way clocked average of 99.44, which is barreling along in anybody's league. While making this time the Packard proved to me its excellent road holding ability on the water slimed surface. With a regular transmission unit this job undoubtedly would top 100 with ease. On a hard, dry surface it probably would show a clean 101 or 102 for the two-way average.

I found that acceleration could be speeded up considerably by starting the Ultramatic out in the low range and shifting to high or drive just before the rpm's peaked. Zero to 60 in high all the way, for example, took 34.4 seconds and I did it in 32 flat using low and drive. These times are fractionally slower than those made in 1950 with the big Packard 400, except for the half-mile from standing start. This is possibly due to the added weight of the car and the wetness of the track.

The 1952 Packard is an extremely fast

American car and must be rated among the best in spite of the extra weight made necessary by the luxury features. (Insulation and sound-deadening material has been doubled, for instance.) The 180-horsepower Chrysler and the new 190 Caddie can take it but with these two exceptions nothing else made on these shores can give it a pushing around. The Packard 200 with a standard or overdrive transmission, plus that big engine, in my book would be a pretty hard car to beat at a green light or over a measured mile.

In summing up, Packard cars were founded as luxury items and in these times of unknown quantities it is good to see a company trying not only to maintain its former high standards but actually devoting a lot of effort to improving them. Packard had many wonderful years in the past when they built the number one glamor barges of the day. More recently they have been through some lean years of indecision. But it looks now as if "the man who owns one" can brag about a car that is good from every angle and as sound and impressive as a pre-inflation $1,000 bill. •

Lo, The Poor Moose

[*Continued from page* 166]

signs of several predators in the immediate area but not one of them had come near the meat. The man-scent kept them at a safe distance. Even a wolverine, the master thief of the wilderness, is suspicious of anything touched by man.

When a moose offers a broadside, standing shot he is not a difficult animal to kill with an ordinary big-game rifle. A deer, if badly wounded, often is tough to track by anyone but a good woodsman. The moose, however, usually moves only a few yards into heavy cover and the hunter can get in a second and finishing shot without delay. Moose do have amazing stamina, however, and the best shot, if you are within reasonable range and know the zero of your rifle, is a spine shot for it drops the animal in its tracks. If you are downwind and can move through the woods without too much noise, there is seldom any difficulty in getting to a point within easy range.

There is a difference of opinion among hunters as to whether the calling method is in line with good sportsmanship. It has been compared to shooting fish in a barrel. But regardless of the method employed or the rifle used, you still find the big problem comes after you have pulled the trigger and watched the moose fall. Frankly, if you ever hear of my shooting another moose, you may be pretty sure that old man Camp has finally gone off his rocker! •

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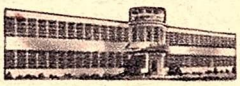


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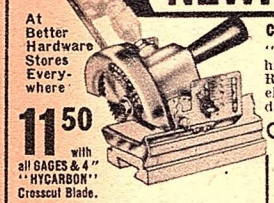
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They Tell You

[*Continued from page* 61]

nurse swiftly summoned the doctor. They fought for six hours and the baby survived. Had he been allowed to slip into the coma, his life would have flickered away in the nursery.

The late Evangeline Adams, high priestess of modern astrology, jolted the nation time and again with her astounding forecasts. In fact, she did it with her first client, the proprietor of the old Windsor Hotel in New York City. She read his horoscope and alarmed him with the prediction that disaster was rushing at him full tilt. A few minutes later, the Windsor Hotel burst into flames. The awed owner told the story to the newspapers and the next day Miss Adams found herself a national figure.

In 1918, she teamed up with G. E. Jordan, Jr., and together they predicted a staggering array of historical occurrences, including the stock market crash of 1929 and the attempt to assassinate President Roosevelt in Miami in 1932. In 1923, Miss Adams and Jordan were married. As the final event in the strange partnership which had stunned the world with its accuracies, Jordan forecast the date of death of his own wife.

Evangeline Adams died peacefully in November 1932, within 22 minutes of the exact time Jordan said she would!

These were just a few of the times when astrologers hit the nail of the future squarely on the head. But are they always right? No! Astrologers have also flopped dismally in their predictions.

Take the time, back in 1939, when one of the most highly touted and successful Hollywood practitioners published the following forecasts of things to come:

Adolf Hitler will meet a violent end within two years.

Franklin D. Roosevelt will not run for a third term because if he did, he would lose.

Shirley Temple will not marry until she is 24 and when she does the marriage has every chance of being happy and lasting.

So what happened?

Hitler was alive and well and waging a frightful war when the two years were up.

Franklin D. Roosevelt not only ran for a third term and won but ran for a fourth and won that, too.

Shirley Temple married at the age of 19 and the marriage broke up shortly after.

Consider this point too: many astrologers' predictions come true but couldn't this be because they make so many?

After all, even you can chart a few hundred forecasts and the law of averages will

see to it that some of them come true.

Yes, leafing back over some of the astrological forecasts can sometimes be mighty embarrassing. A British seer was certain that World War II would not arrive until the mid-1940's. A French astrologer was equally certain that the war, once begun, would end no earlier than 1950. And many have predicted the demise of one Josef Stalin long before this but Uncle Joe is still around.

These are only a few of the actual, recorded feats, both successful and unsuccessful, of the astrological cult. Let's look still further—what is astrology anyway? What's it all about?

Is it occult stuff served up with darkened rooms, heavy incense and practitioners who dress in flowing robes and pointed caps like sorcerers of the middle ages?

Far from it. In fact, the astrologers themselves are the first to blast the phonies who label themselves wizards and cunningly extract big dough for their hocus-pocusing. Says Paul G. Clancy, editor of *American Astrology* magazine, one of the leading publications in the field: "It is truly unfortunate that sincere astrologers are at present powerless to prevent ignorant and unscrupulous persons from calling themselves astrologers and using astrology as a front for rackets."

The true practitioners are members of the American Federation of Scientific Astrologers, which has its headquarters in Washington, publishes a yearbook and holds annual conventions. Members, many of whom have swank offices in professional buildings, adopt none of the trappings associated with crystal-ball gazing. They are briskly businesslike and a consultation, far from resembling a seance, is no different than talks between lawyer and businessman or psychiatrist and patient.

Astrology says just this—the character of every human being is determined by the position of the stars, planets, moon and sun at the moment of his birth. Thereafter, he is affected for better or worse, according to the original astrological sign of his birth, by the changing positions of the heavenly bodies all through his life.

The keystone of astrology is the horoscope, from which all predictions, character analyses and judgments about what should or should not be done are made. It is called a chart, a wheel or a nativity. It is a circle divided into 12 "houses," each of which relates to some phase of human life, such as money, love, work, old age, hopes, wishes. Superimposed on each house are the 12 ancient signs of the zodiac, each of which relates to certain parts of the body. These include Gemini, related to the hands and lungs; Virgo, the intestines and bowels; Libra, the loins; Scorpio, sex;

[*Continued on next* page]



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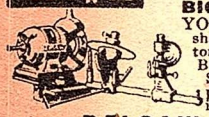
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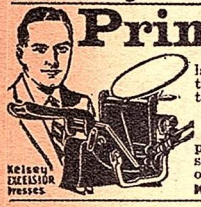
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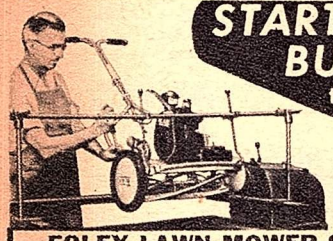
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They Tell You

[*Continued from previous page*]

Sagittarius, the thighs; Pisces, the feet; Taurus, the throat; Aquarius, the ankles and calves; Leo, the heart; Cancer, the stomach and breasts; Capricorn, the knees, and Aries, the head. Finally, the horoscope includes the ten heavenly bodies (eight planets, the sun and the moon) each of which represents some motivating power—Venus, for example, means drawing power or attraction, while Mars means energy.

When a client comes in, the astrologer wants to know the year he was born—the place, month, day, hour and minute, if possible. From this and other information, he draws up a horoscope in which the houses, zodiac signs and planets have a different relation to each other, depending on the specific information given.

Then the astrologer makes his interpretation, a vastly complicated thing based upon the known inter-relationships of the marks he has made on the horoscope. He might come up with something like this: "Saturn is in the 12th sector, and Mars is on the cusp of the 1st in Pisces, opposing Neptune." Gibberish to you—but to an astrologer that means you are a psychopathic case.

The complex art is by no means a new fad. Developed by the ancient Babylonians, it spread to Greece, Rome, India, China, Egypt, reaching such a point in Europe in the 14th and 15th centuries that kings would not declare wars, sign treaties or enact laws unless the stars said they could. In fact, in 480 B.C., the Spartans refused to march to the support of the Athenians against the Persians at Marathon because the moon was in the wrong phase.

Rulers of old were not the only ones who sought counsel in the heavenly bodies. There once was a man named Adolf Hitler, who appointed generals to command his armies only if they had a good astrological aspect, and who waited until the stars were right before he made a move.

Hitler became interested in astrology back in 1923 when the German astrologer, Baron von Sobottendorff cautioned him against any major undertaking in November. But Adolf spurned the warning and launched his beer-cellar putsch in Munich, which got the little corporal carted off to jail. His cell-mate in the Landsberg prison, Rudolph Hess, reminded him of the astrologer's words and Hitler began boning up on the stars in earnest. From then on, he believed in them utterly.

One of the most amazing, and least-known facts of World War II is that the Allies actually waged a counter-astrological warfare against Hitler.

Knowing that the Nazi leader took his horoscope mighty seriously, Britain established an agency known as the Psychological Research Bureau and placed at its head a noted astrologer, Louis de Wohl. Captain de Wohl plotted the horoscopes of Hitler and his chief aides, following as closely as possible the "good" and "bad" days. Britain thus knew at all times what Hitler's astrologers were telling him. It was the first time since the Thirty Years' War, de Wohl said later, that astrological warfare was waged.

Here's how it worked. In 1940, after the fall of France, all Britain was girded for a Nazi invasion but the big question was when. De Wohl was asked to determine what Hitler's astrologers were advising him. He came up with this—Hitler could count on luck for a major enterprise between November of 1940 and mid-February of 1941. But weatherwise, an invasion of England at that time would be sheer folly. The first really good opportunity for an invasion of an island after that, de Wohl continued, would come only in the last part of May, 1941.

Britain marked time all through that long winter. Hitler did not invade. And then, in May, the Fuehrer launched his invasion of an island. But the island was not England. It was Crete!

Probably the most astrologically-minded nation on earth is Siam, where few things are ever done without consulting the seers.

From political coups to love affairs, the astrologers predict. Here is what happened when a father asked astrologer Hellene Paul to draw up a chart for his daughter.

In July or August of that year, Miss Paul told him, the girl will marry a man much older than herself and of a different nationality or religion. In mid-July, the father went to a railroad station to see his daughter off on a trip.

Standing with her on the platform was a man to whom he was introduced and together they said goodbye to the girl. When the train pulled out, the stranger faced the father and said:

"I have known your daughter quite a long time, sir. With your permission, we're going to be married within the next few weeks."

The stranger was much older than the girl. And he was of a different religion. And they were married in August.

Was it superstition? Coincidence? Hocus-pocus? Or can astrologers really tell you about tomorrow?

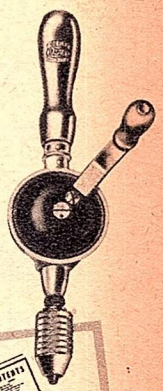
In any event, while the controversy continues, astrologers all over the world disregard the skepticism and go busily about their way predicting wars, love affairs and long trips—sometimes correctly and sometimes not. •

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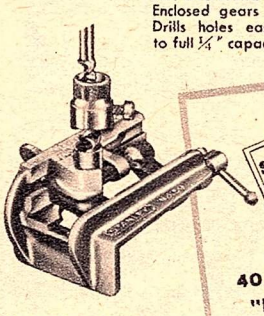
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Business From Odd Jobs

[*Continued from page 76*]

loader for digging up fill and top soil and a rear-end scoop so that he could do small excavation jobs like digging foundations for garages or digging out areas for lily ponds and small swimming pools. In addition, he bought a small Willys Jeep which he uses as cheap transportation to estimate prospective jobs and carry small tools.

When he heard that a fellow wanted to get rid of a Chevy ton-and-a-half dump truck, Gene snapped it up. With this he hauls around his trailer-tractor and sometimes stone, fill and top soil. Gene is constantly on the alert to line up dirt for fill. Many times he gets it for nothing for merely hauling it away. He sells it for $1.25 a yard or $6.25 a load.

Top soil is always in demand, its price varying with the quality of the soil. For the best clean top soil Gene gets $7.50 a yard. Secondary top soil he sells for $4 a yard. This, too, he often gets free.

How does Gene estimate his contracts? First he figures his necessary expenses such as liability-and-property damage insurance which is a must in his business. Then he adds 15 per cent to the base price to allow for wear and tear and possible breakdown of machinery.

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Gene surveyed the trees. He found that they averaged about 10 inches in diameter and about 35 feet in height. Although locust trees often grow tall, they seldom have too many big branches. Gene took this factor into consideration on estimating his job. He arrived at a figure of $10 per tree or $300 for the contract. Gene got the job and it took him about three days to complete it.

Bigger trees, like a large oak or hickory which measures two to three feet in diameter and is loaded with many heavy branches costs a customer $60 per tree.

In the winter, he clears snow-choked driveways for $5 per 100 to 150 feet. He often does as many as 10 in a day.

For a little fellow who never had any mechanical talent, Gene Lamb certainly is doing a job. He is shrewd and careful with his customers and when he takes on a contract, he delivers as agreed. And, as long as people own homes and plan to build more, Gene will continue to clean up in more ways than one. •

Building Mosquito

[*Continued from page* 137]

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Dash and Dash Stanchion: 1 sheet, 1/2" x 12" x 3'-0"
Transom and Seats: 1 sheet, 3/4" x 3'-0" x 5'-0"

Sitka Spruce

Floor Boards: 6 pieces, S4S 3/8" x 4", 7'-0" long
Deck Center Batten: 1 piece, S4S 5/8" x 1 1/2", 4'-0" long
Deck Beams: 1 piece, S2S 5/8", 2" wide, 8'-0" long
2 pieces, S2S 5/8", 3 1/2" wide, 8'-0" long
Cockpit Coamings: 2 pieces, S4S 3/4" x 1 3/4", 7'-0" long
Sheers: 2 pieces, S4S 3/4" x 1 3/4", 11'-0" long
Side Frames: 1 piece, S4S 3/4" x 2", 10'-0" long
Bottom Frames: 1 piece, S2S 3/4", 4" wide, 8'-0" long
1 piece, S2S 3/4", 6" wide, 6'-0" long
Keel: 1 piece, S4S 1" x 4 1/2", 10'-6" long

Oak

Sheer Guards and Rub Strakes: 4 pieces, S4S 1/4" x 1", 12'-0" long
Stem Cap: 1 piece, S2S 3/4", 1" wide, 10" long
Bottom Battens: 4 pieces, S4S 3/4" x 1", 10'-0" long
Seat Risers: 2 pieces, S4S 3/4" x 1 3/4", 6'-6" long
Chines: 2 pieces, S4S 3/4" x 1 3/4", 10'-6" long
Transom Bottom and Side Framing: 1 piece, S4S 3/4" x 2", 8'-0" long
Transom Deck Beam: 1 piece, S2S 3/4", 8" wide, 5'-0" long
Transom Doubler: 1 piece, S4S 3/4" x 12", 14" long
Dash Brackets: 1 piece, S4S 1 1/4" x 1 1/4", 20" long
Quarter Knees: 1 piece, S2S 1 1/4", 6" wide, 12" long
Transom Knee: 1 piece, S2S 1 1/4", 8" wide, 8" long
Stem: 1 piece, S2S 1 1/2", 8" wide, 22" long

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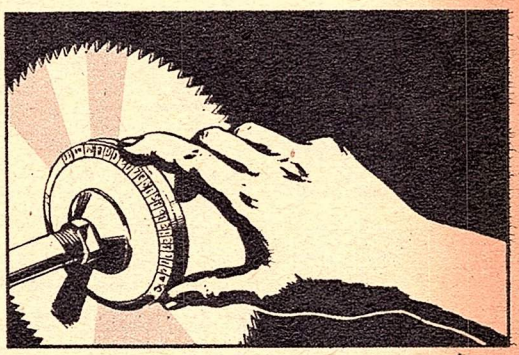
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1 throttle, Fig. No. 9,264
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1 piece, steerer rope, 13'-0" long
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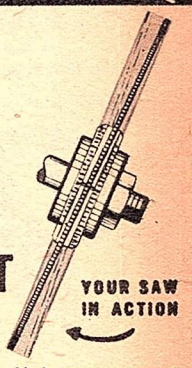
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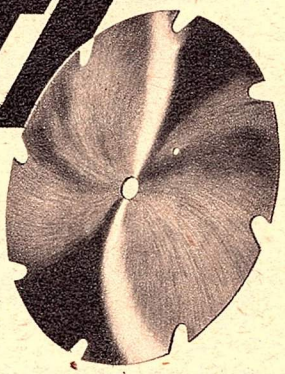
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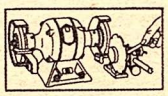
For a dependable safety saw blade that really minimizes danger and "kick-backs" from circular sawing—insist on the genuine PTI blade. (U.S. Patent No. 2,559,355).

Precision made of chrome vanadium steel by one of the world's leading saw blade manufacturers. Cuts cleaner, quieter, smoother—and requires 30% less power. Available in sizes from 7" to 16" and for standard makes of portable saws.

PTI

NEW! PTI saw sharpener for safety blades

Get franchise in your locality! WRITE FOR DETAILS.



INCORPORATED, 401 Broadway, New York 13

$75,000,000 Ideas

[*Continued from page 67*]

could improve operating efficiency on Kodacolor film-processing machines. A few months ago each was called in again, this time to collect an extra $2,250 for the same suggestion. And glad tidings did not end with them because the company so far this year has paid out almost $200,000 on all suggestion-box awards.

Even the little thoughts that just flash through your mind can be turned into ready cash. For example, would you think of suggesting that a company put mirrors in an elevator? Well, a porter for a New York insurance company did and they thanked him with a $100 bill.

Would you think of telling your boss to change the brand of wax being used to polish office floors? A payroll clerk in a Philadelphia factory did and got a $250 check because that's what it cost his boss the last time someone slipped and had an accident.

Charles Mayer, working for a factory in Akron, Ohio, practically made a business of turning in ideas. Not long ago he submitted 24 suggestions. Nearly all were accepted at prices ranging from $5 to $450 apiece. And when he needed money to pay a doctor's bill recently, he sat down to bat out an idea and he turned it in, figuring it to be a $25 job. Instead, he got $250 and promotion to foreman.

J. W. Melton was only a stockkeeper in an Illinois railroad freight yard. But he thought it would be cheaper for his firm to replace a malleable wheel truck part casting with a forged part instead. He got $605, which represented the first year's savings for the company, plus a $1,000 bonus.

Even the government has been paying off for ideas placed in suggestion boxes. Actually, the tremendous growth of suggestion boxes as a profitable outlet for ideas was spurred by the government during World War II in an effort to speed up the victory drive. Today, an Act of Congress authorizes all government agencies to pay for ideas.

R. L. Graumann, working for the Washington Navy Yard, once cashed a $5,500 check from the Navy for showing them how they could save on the cost of making 40-mm shell fuses. And Dick Hoffman, attached to the New York District Corps of Engineers, developed a river-dredging idea that netted him $2,300. Then the government patented a device based on his idea and now, every time they let a private company use it, Hoffman collects royalties.

There's no telling where the idea business will end. One advertising man, James Webb

Young, literally made a fortune out of selling his thoughts to different companies. By the time he was 42, he retired with enough to buy a 10,000 acre ranch in New Mexico and keep a Park Avenue apartment for air jaunts into New York. Even after he retired, he made a four-figure piece of change just by telling a toothpaste manufacturer he should change the picture on his carton. His whole system of thinking up ideas has already been put into a book, *A Technique For Producing Ideas.*

In Chicago, representatives of some of the nation's leading industrial giants recently formed the National Association of Suggestion Systems, an organization devoted to bigger and better ways of making the suggestion box pay off. And in New York, LeRoy G. Mills has already established himself as one of the country's top advisers on setting up efficient suggestion-box systems.

These suggestion whiz kids will tell you that you don't have to be a mechanical genius or a budding scientist to grind out ideas worth money. The real experts are often so busy paying attention to so many other things they often overlook important and costly details.

Take the case of Pete Saputo who builds cushions in the St. Louis Lincoln-Mercury plant. He used to attach fabric pads to certain parts of back-seat auto frames to prevent squeaking. Pete noticed that the pads weren't really needed because there was enough space between the frame and other parts to keep them from coming together and thereby avoiding squeaks. He picked up an extra check for $1,500 when he turned his observation in as a suggestion.

Or consider the case of the laborer in a New Jersey wire and cable plant. Copper cables had to be drawn through a continuous bath of warm water at a given speed. Temperature and time—that's all company engineers were concerned about. But not so the laborer who watched the running water being poured out into the bay through a waste pipe. "Why not save the water," he suggested, "by letting it run right back into the bath?"

The company gave him $600 for helping them save $3,000 a year on their water bill!

If you've got a tricky way of handling some work on your own job, don't keep it to yourself. At a toy plant in Connecticut a girl had the job of reaming out both ends of small solid-brass tubes. She was taught to do it by holding each end, one at a time, against a motor-driven reamer. But she got the idea that it would be easier to ream out both ends at the same time by hooking two reamers to a foot pedal, like a sewing machine, and holding

[*Continued on next page*]

Before you buy . . .



One look inside the handsome Remington "500 Series" 22 rifles will show you why they're such an unbeatable value. For instance, the bolt has *two* extractors and separate ejector. No chance for stuck cartridge cases!

Notice the *double* locking lugs. They mean years more fun with a Remington . . . maintain correct head spacing for fine accuracy through the years.

The bolt has *double* cocking cams . . . the smoothest type of bolt action made. Doubly safe, too! Red firing indicator signals when rifle is cocked. Red dot shows when safety is off.

No other low-priced 22's give you so many double value features. So for a *lifetime* of shooting fun, see the Remington "500 Series" 22 rifles soon.

Popular favorites:

Model 510—Single Shot
Model 511—Box Magazine Repeater
Model 512—Tubular Magazine Repeater

Remington DUPONT

SAFE JIG SAW

No. 201



CUTS 1" WOOD QUIETLY!

...MAKE MONEY—START A SPARE TIME, PROFITABLE BUSINESS with THIS AMAZING, NEW, SAFE SYNCRO ELECTRIC POWER SAW!

ONLY $22.95

MOTOR INCLUDED

60 Cycle, 110-120 Volt AC

Here's the most powerful saw of its kind! SYNCRO cuts 1" wood, thin metal, plastic. SAFE—blade does not pull finger toward it! Portable. QUIET—use even in apartments! Adjustable "any length cut" arm. With BUILT-IN New Reactance Type Electric Motor, $22.95 at dealers or postpaid from factory. (Dealers, Jobbers—write!) Men who *know* buy SYNCRO!

MOST POWERFUL SAW OF ITS KIND!

SYNCRO CORPORATION
Dept. W-12, Oxford, Michigan

1952 HARLEY-DAVIDSON HYDRA-GLIDE®

with the MIGHTIEST MOTOR in MOTORCYCLING!

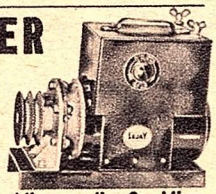


Built like the costliest car. Has the newest deluxe features... super-power OHV motor, Hydra-Glide steering ease and riding comfort, 4-speed foot shift-hand clutch, Parco-Lubrized valves. A lifetime of fun! See your dealer. Write for FREE "Enthusiast" magazine and literature on 1952 models.

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Dept. MI. Milwaukee 1, Wisconsin

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$300 VALUE — ONLY $97.50



200 Amperes Continuous Duty. Up to 250 amps. intermittent duty. Easily mounted on your tractor. Welding range from 0-up by dial type control. 1-yr. guarantee with money back 10-day trial period. Write for FREE literature. OR send 35c for PLAN "Build Your Welder from Aircraft Generator." Literature included.

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WANT TO SAVE GAS? BE PREPARED IF RATIONING COMES



AMAZING GANE NEEDLE | TRY ONE FREE IN YOUR CAR!



1/2 MILLION NOW IN USE!

MANY GANE NEEDLE USERS REPORT UP to 25% more mileage, faster pickup, easier starting and smoother idling.

NOW TEST A GANE NEEDLE IN YOUR CAR for ten days, then compare your mileage and performance. If satisfied, send $1.50 per needle (8 cyl. cars take 2). If not satisfied, just return it—fair enough? Since authorities differ on its merits and some users report no improvement, TRY BEFORE YOU BUY! (Gane Needle replaces idling adjustment screw in carburetors—easily installed in a few minutes.)

FREE Auto Economy Manual

Tells how to save gas, tires, brakes, etc. Also introduces many new economy products. (Sent absolutely free to all who try Gane Needles.)

WRITE TODAY. ENCLOSE NO MONEY. PAY POSTMAN NOTHING. Just send us your name, address, and make and year of car.

NATIONAL AUTOMOTIVE RETAIL CORP., Dept. K-1
350 W. Washington Blvd. Venice, California

$75,000,000 Ideas

[*Continued from previous page*]

the brass tubes between them. She bought a '51 Chevrolet with what she got for putting her trick of the trade down on a suggestion slip.

Other profitable suggestions have been known to come from those who are not afraid to satisfy their curiosity. A clerk, working for a hair-tonic firm, was curious to know why the company put red plastic caps on each bottle. Why that color? "No particular reason," a foreman told him.

But the clerk's curiosity wasn't satisfied. He found out that red caps cost more than black caps. So, he turned in a suggestion that the company ought to use black caps instead. The company looked into the matter. Sure enough, they figured a saving of at least $25,000 per year, changed the color and gave the clerk 50 per cent of one year's savings.

Employes with a constant eye for turning waste into new products probably hit the suggestion-award jackpot more often than others. Sometimes it's a grand slam like the one turned in by a Detroit machinist working for a sheet-metal factory. He asked for permission to take home pieces of scrap steel to make a bathroom cabinet.

"Sure," he was told. "Go right ahead. We throw the stuff out anyway."

A few weeks later he showed his scrap-steel bathroom cabinet to fellow workers. They told him to file a suggestion and then showed it to the foreman. The foreman showed it to the boss. The boss showed it to the board of directors. Today, that company is one of the biggest bathroom-cabinet firms in the country and the machinist is one of the executives. But first he got a few thousand dollars for his suggestion.

Just how do you go about dreaming up money-making suggestions? Well, here are ten fundamentals the experts say you should keep in mind to steer yourself right into a mint of ideas:

1. Know your employer's product or service thoroughly.

2. Know what goes into it from start to finish.

3. Find out what kind of people buy it and especially why some won't buy it.

4. Find out what's wrong with faulty products being returned or why services are being cancelled.

5. Make a habit of talking to salesmen and find out what's the toughest thing the boss has to sell.

6. Study your company's competitors for ideas that can be adopted. No boss objects

if you can show him how he can make added profits legitimately out of his opposition's techniques.

7. Think of ways to cut down on plant and office accidents. Remember, your boss saves when his insurance costs and damage suits are kept down.

8. Think of things that will make it more attractive for customers to visit the plant or office.

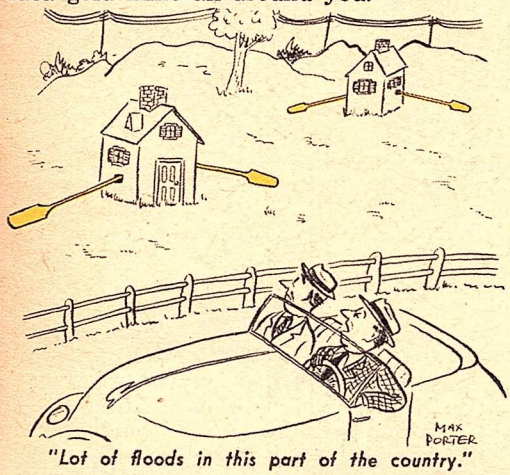
9. Don't be afraid to state reasons for turning in your ideas.

10. Don't laugh at any of your own ideas. Even if they're not accepted, it won't hurt for the boss to know that at least you've been using your head.

But the suggestion-system specialists warn you to make a distinction between an idea and an invention. If your idea requires plans, sketches, special tools, or even working models—especially those that can be used by other companies—you've probably got a patentable invention and you should take all the necessary precautions.

Nevertheless, there's even a way to safeguard your own suggestions. They may not be patentable but they are protectable to make sure credit is given where credit is due. Make a note or an extra copy of any suggestion you turn in. Record the date, time and place submitted. If you wish to be especially cautious, you can send the idea to yourself by registered mail. Then, if your suggestion is turned down, make a note of that date and the name of the person rejecting it. Remember one thing—no one is doing you a favor by paying you for your suggestions. It's big business all around and that's the way you have to look at it.

There's an old saying which states that if you work in a gold mine, there's no such thing as scrap. But, remember, if you're working anywhere else, there might be an idea gold mine all around you. •



"Lot of floods in this part of the country."



Handy Hank says:
"Try these slick tricks with PLASTIC WOOD"

Fill cracks in chairs—

Makes loose joints firm, sands to a smooth finish!



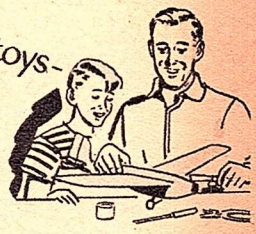


Reset loose hinges—

Replaces rotted wood, tightens loose screws . . . *easy* to apply!

Repairs broken toys—

Mend cracks, nicks! Smooth finish!



Also useful in filling cracks in floors, nail and screw holes, repairing loose tiles. *Handles like putty . . . hardens into wood!*

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IN CANS OR TUBES



DOZENS OF OTHER USES

best white tape made

ONLY 98¢*



The new "Evans White-Tape" has everything you'll find in tapes costing over $1.50—plus.

- snow-white blade with bold, legible, jet-black numerals and graduations. Graduated in 32nds for first 6 inches.
- sturdy die-cast case heavily chrome-plated, calibrated for quick reading inside and outside measurements.
- blade ½" wide made of finest high carbon steel—tempered—Bonderized—enamelled—baked.
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- every "Evans White-Tape" is unconditionally guaranteed.
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- underside is white, too. Mark with ordinary pencil, remove mark with flick of thumb.
- unheard-of low price*: 10-ft. $1.49; 8-ft. $1.19; 6-ft. 98¢. Prices higher in far west and Canada.

Sold only through retailers.

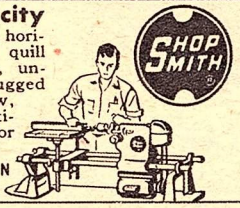
Evans & CO. Elizabeth, N. J. • Montreal, Quebec

Makers of Evans 6-ft. Folding Rule and "Folding Yardstick"

Unlimited Capacity

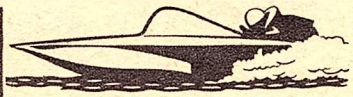
Only SHOPSMITH has horizontal drill, with 4" quill feed, time-saving jigs, unlimited capacity. Rugged unit converts to saw, sander, lathe and vertical drill press. Write for free catalog.

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World's Fastest Boats



Build your own high speed racing boat from a **Champion** plan! Send 25c for catalogue containing pictures and description of 18 models. Hydroplanes, Utilities and 3 Points. 6 to 20 ft. lengths. **CHAMPION BOATS,** 1524 W. 15th St., Long Beach 13, Calif. Dept. 16-M.

ask your dealer for **Red Devil** FP-33 Keeps Floors Gleaming



Tackles any job—scrubbing, waxing, polishing, buffing, sanding . . . any surface. Twin 6" brushes — no bucking, no sideslip. Write for free folder Dept. MI.

$64.50

RED DEVIL TOOLS, IRVINGTON 11, N. J., U. S. A.

Apartment Radio Shack

[*Continued from page* 157]

network, the recording system, an SCR-211 frequency meter, a large broadcast-type turntable, a collection of phonograph records, and two 12-in. loudspeakers.

It is perfectly possible to walk around in the apartment, the standard complement of furniture is present, and—believe it or not—the place does not look like a mad scientist's lair. This can be done by almost any ham if he will pay proper attention to the chief item that constitutes the key to the whole affair, which is merely a matter of space. It's obvious that you can't really increase the area of the floor except by knocking down a wall. But a rearrangement of furniture will almost always yield space that wasn't there before.

Use a tape measure, a pencil, and about a ream of paper before you actually start pushing pianos. In my bedroom, for instance, the furniture was arranged at first as shown in fig. 1. When we moved in we figured that the room was so small that wall space wasn't sufficient to do it in any other way. Besides, we just put the twin beds in the usual twin bed arrangement—parallel, with a night table between.

Four days later, after plenty of paper work, fig. 2 came into being. Note the difference. Doesn't look like there is nearly as much stuff in the room—but there's more. A workbench has been added! Besides, the room looks more spacious. Same house, same room, but oh brother—what a difference!

The bench itself is a solid table I picked up at a second-hand store for $2.25. Three AC sockets are mounted on the front apron of the bench and three on a plywood lip nailed to the rear. They are wired in parallel and furnish 117 volts AC for any reasonable number of gadgets at any locations on the bench. Vises are at both ends of the bench.

This is the time to ask where the transmitter and receiver are located. Well, the lead photo speaks more eloquently than words. On top of the desk from left to right are the recording turntable and amplifier, the recording system power supply, the SX-42, with the recording control console atop it, and the rig with antenna tuner on a breadboard sitting on top.

We had the same overcrowded situation in the living room, where the desk is situated, but a rearrangement of furniture solved that also. As it is, every inch of wall space is used but it doesn't look crowded. There are bookcases along another wall; a shelf houses the technical library. Frankly, I never would have believed I could get all these things in a little three-room apartment, but if I can do it, you can, too!—*R. H. Dorf* •

Stereo With A Brownie

[*Continued from page* 148]

the sighting strips on top of each camera without moving the camera pair.

The normal inter-ocular distance is about 2½ in. The spacing between the centers of the lenses of the two cameras mounted in this manner is 2¾ in. or just slightly more than the normal spacing. This spacing will give a normal amount of stereoscopic effect. If you wish to accentuate the stereoscopic effect the spacing between the two cameras can be increased by using a hinge on each camera and by placing a block of wood between the two hinges to increase the separation by any desired amount.

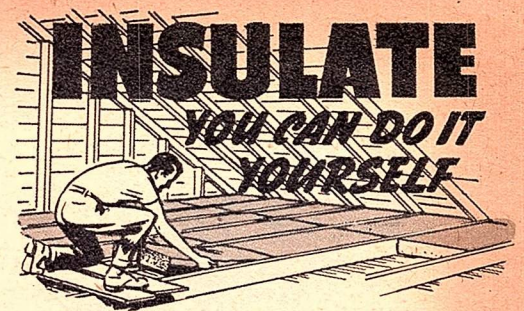
In use, it will be found convenient to construct a holder for the cameras which may be mounted on a standard tripod or table and to provide a simple mechanism that can be used to activate both camera shutters at the same time. A simple holder can be easily made for the cameras as shown in the drawing. The cameras should slide snugly into this mounting. If it is too loose, a strip of thin felt can be cemented to the upper or lower bearing surfaces. A nut for a ¼-in. machine screw can be soldered to a 1-in. square rectangle of brass which can be countersunk and fastened with screws into the center of the base to provide an attachment for a camera tripod.

A simple mechanism can be easily constructed to shoot off both of the shutters at the same time. The device consists of a lever arm pivoted in the center of the camera holding frame on a nail. A footplate to contact the uppermost shutter knob and a nail, the end of which has been flattened and bent at 90°, engages the lower shutter knob and is attached to the far end of the lever by means of a stiff spring.

To mount the stereoscopic pairs for viewing, the prints should first be identified as to right- and left-hand images by noting the position of objects in the background relative to objects in the foreground. The left-hand images will show a displacement of the background relative to the right foreground. •

ATOM-BOMB SHELTER

Combine practicality and security by engaging in this two-in-one project which includes a double garage and a sturdy concrete shelter built into one corner. Shelter may be used for storage or as tool room. For your copy of the complete plans which include diagrams and full instructions, remit $1.00 to *Mechanix Illustrated* Plans Service, Fawcett Building, Greenwich, Conn. Plan No. HJ-18.



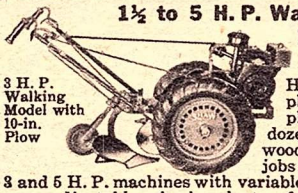
IT'S a cinch to insulate your home with Gold Bond Rock Wool Batts or Blankets. You'll save a lot of money in fuel bills and keep your house warmer in winter, cooler in summer. Light, easy-to-handle batts slide between rafters or attic floor joists. You get extra fire protection too. Gold Bond Rock Wool Batts and Blankets *can't burn.* Batts are 2 and 4 ft. long, Blankets 8 ft. long. Both come in standard widths to exactly fill the space between framing members. Be sure they're "full-thick" and bear the Gold Bond name for maximum insulation and fire protection.

Available at your local Gold Bond Lumber and Building Supply Dealer!

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with a SHAW "DU-ALL"
WALKING OR RIDING TRACTOR

1½ to 5 H. P. Walking Models Do Everything In Gardening

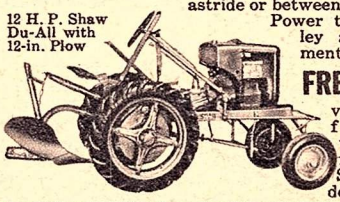

3 H. P. Walking Model with 10-in. Plow

Handle 6, 7, 10-inch plows... cultivate, plant, mow, bulldoze, cut trees, saw wood, do many other jobs fast and easy. 1½, 3 and 5 H. P. machines with variable speed transmission, adjustable wheels, plenty of plant clearance. Power turn models and power take-off attachments available.

Powerful 5 to 12 H. P. Riding Tractors Handle Work on Good Sized Farm

Also ideal for second tractor on large acreage. 5, 8, 12 H. P. models plow 4 to 8 acres daily, plant, cultivate, mow and rake, do many other jobs. Works astride or between 42-in. rows. Power take-off pulley and attachments available.

12 H. P. Shaw Du-All with 12-in. Plow



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In the language of low-cost transportation CUSHMAN is THE word. It says everything—Low purchase price—low upkeep—very low operating cost—¾ cents per mile! You'll be money ahead and miles ahead to GO CUSHMAN this year. Get the facts now. Write at once for FREE illustrated literature.

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Do expert saw filing at home. Precision filing easy without experience. Two simple adjustments. Keeps any hand saw extra sharp and true-cutting. Complete with file. Money back guarantee. Cash with order, prepaid. (COD postage extra.) Order today. $2.95.

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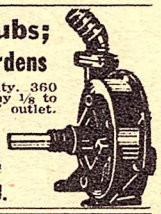
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Includes 1 coarse, 1 fine on each side
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Extra Sandpaper 5 grits 50c
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JAXON COMPANY • 369 ELLICOTT ST. • BUFFALO 3, N.Y.

Car Care

[*Continued from page* 156]

from locking, keeps the braking at the brakes and not between the tires and the road.

Feeling your way is an important safeguard in all slippery weather driving. What looks like glare ice or hard packed snow may be an even more treacherous situation if there is a moist film on the surface. They found in the "skid row" tests that changing temperatures or sunny skies will make a difference of as much as 130 per cent in the distance a car will skid. Chainless tires at 4 degrees below zero may stop in around 110 feet, yet at 30 degrees above zero jump to 250 feet over the same ice and at the same speed of 20 miles per hour.

In other words there are variable surface conditions which complicate matters and which may lead to careless conclusions. So feel your way. Also there are marked differences in the ability of tires to handle specific situations. Some of the mud-snow tires have so little contact area on wet roads, icy roads or snow packed roads they may be worse "skidders" than plain treads with cross cuts. Special action of the treads during deceleration may fail to come into action where there isn't sufficient space or where the brakes cannot be applied firmly enough to make the tires dig in. What may serve best to help a car start or stop on a very smooth slippery surface will thus be least desirable when trying to get started in snow. Many a smart driver waits for conditions to change. He is also wary of spotty conditions—the road that is safe enough except right where the driver may need to make his stop.

It is not recommended that drivers rely on the trick of semi-deflating tires to meet winter driving hazards, but certainly in a pinch this is better than nothing. One well-known tire has sidewall construction which is not damaged by underinflation. Mud hooks which attach through the wheels are useful for getting started but are not recommended for control on slippery roads. Nor are chains with broken or missing cross links. There must always be sufficient chain contact to prevent the tire from finding a free sliding area. Use spreaders to keep chains taut.

Armed with the National Safety Council's facts any driver can thus leave skid row right there on the ice of Pine Lake, going his way in comparative safety. And no s'kidding! •

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Salt Shaker Roundup

[*Continued from page* 141]

in. across and about ⅜ in. deep. The exact dimensions are relatively unimportant. We are now ready to taper the shaker. This is best done on a band saw. Cut it so that the base will slope to a ⅞ in. square at the top.

Next step is to drill the holes in the top from which the salt and pepper will flow. Use a soft pencil and carefully letter an S on the top of one shaker and a P on the top of the other. Pad the bottom of the shaker and clamp it in a vise. Then drill the holes, following the outlines of the letters. A $\frac{1}{16}$ in. drill mounted in the chuck of a hand motor tool does a neat job.

The square type of salt shaker fulfilling the same purpose is made a bit differently. It consists of four pieces of wood, jig-sawed to the shape shown on the drawing. The two center pieces have 1x2½ in. openings cut into them which form the storage area for the salt or pepper. After these four pieces are clamped and glued together, drill a ½ in. hole in the bottom for a stopper and $\frac{1}{16}$ in. holes in the top for dispensing.

The pyramidal salt shakers, after sanding, were lacquered while the block type were shellacked. Take your choice. Either style will make a useful and gracious addition to your dinner table.

Maple and walnut turning blocks, suitable for making such salt shakers can be obtained from Albert Constantine of New York City. •

TV Tables

[*Continued from page* 160]

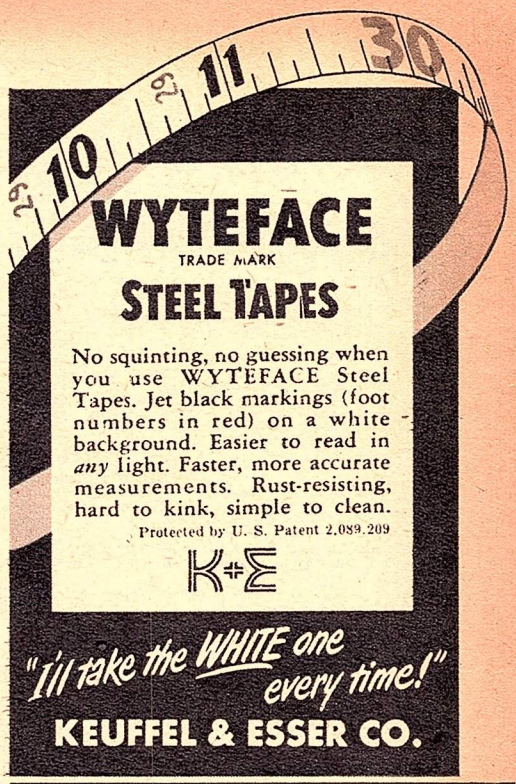
shaped, hammer it on a metal surface. The hammering will harden the wire and make it springy.

The table tops are made of ½-in. plywood. Glue four hardwood disks to the underside of each top at the corners. These are to provide depth for sockets into which the legs will be driven.

Make saw cuts in the tenons of the legs and insert small hardwood wedges into them. Apply glue and drive the legs home with a mallet. The wedges will be forced into the sawcuts causing the tenons to spread and make a tight fit.

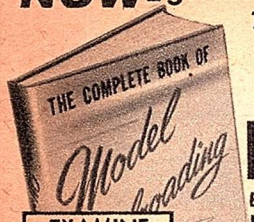
The edges of the plywood tops are bound with strips of light weight sheet brass which has been pebbled. The pebbling can be accomplished by hammering the inner surface of the strips with a piece of wood through which a nail has been driven. The strips are secured in place with brass escutcheon pins.

—*Charles Brownold* •





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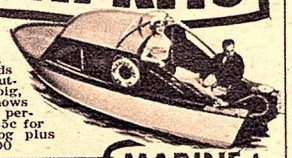
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Model Roundhouse

[*Continued from page* 130]

miniature trains, each of which cost a thousand dollars. Two are Diesel passenger trains and the other two are steam locomotives, a No. 2900 Santa Fe, and a No. 4300 Southern Pacific. These trains are kept in continuous operation over the vast stretches of double and sometimes triple tracks, which are supported by over 200,000 railroad ties.

The exhibit, a masterpiece of artistic and realistic landscaping, presents in intricate and minute detail, a panoramic vista of California's industry and geography. Its purpose is to give the public a comprehensive picture of the dependence of industry and transportation upon each other. It has mountains and canyons, lakes, rivers and harbors, desert plains, farmlands, oil fields, cities and industries. Trucks and cars roll back and forth along miniature highways, pulled by a concealed chain. Airplanes taxi across field of a miniature airport. Animated oil derricks pump away—and trains go around and around.

To guide the public through the exhibit in an orderly sequence, the display is classified into ten sections, each of which has a loudspeaker over it. As the spectators view Section 1, its lights go on and a commentator's recorded voice comes through the speaker, describing the history and progress of California's industry and transportation as revealed in that section. At the end of his discourse, the lights grow dim and Section 2 lights up. The crowd moves on to hear his narration as related to the new section. This procedure follows through until the entire exhibit has been viewed.

To create the illusion of distance, the exhibit is built to a receding scale, starting with a scale of ¼-in. to the foot (O gauge) and decreasing gradually to a scale of ⅛-in. to 4 ft. and less near the back wall.

As the trains move along, they cross a miniature desert, a quarry, an airport where a tiny transport plane is taxiing on the field, an aircraft plant, smelters and steel mills, and an HO gauge branch line railroad.

The train then goes into a tunnel and emerges at the opposite main section, crossing a bridge over a harbor in which there are tugboats, freighters, and fishing boats. A lighthouse blinks on a high cliff. The train then goes through the petroleum fields, past working oil derricks, into farmlands, past freezing plants, citrus packing plants, a cattle ranch, a farmhouse, and through a small town with a typical Main Street. It takes the train from three to four minutes to complete the entire circuit. The exhibit took over a year to build at a cost of $50,000.—*Louis Hochman.* •

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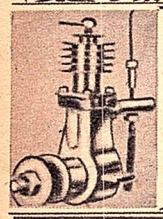
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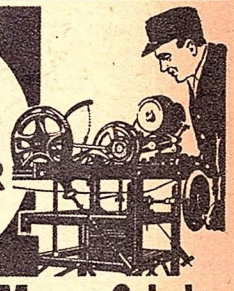
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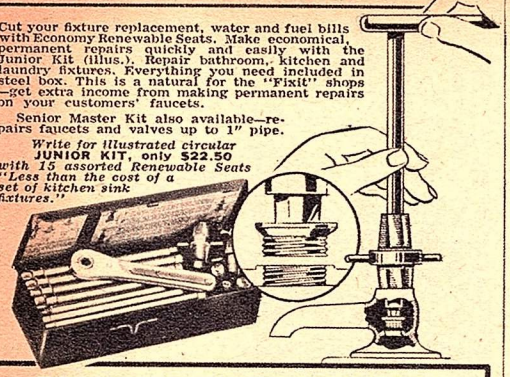
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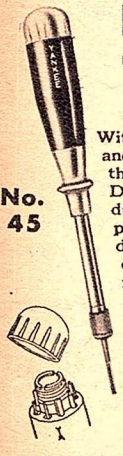
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[*Continued from page* 138]

any spot within a 24-in. diameter; finally, the lamp uses a new type of bulb that carries its own diffusion surface, thus dispensing with a diffusion bowl.

Dimensions for the base were worked out geometrically to produce a pleasing design, and should be maintained. However, they can be scaled up or down somewhat in order to produce a larger or smaller lamp base. Viewed from the front, the grain runs left and right on all drawer fronts and top surfaces, and vertically on all sidepieces and exposed parts of partitions between drawers. These partitions need not run the full depth of the cabinet, but guide strips should be installed to keep drawers straight. Fasten all wood joints with glue, and reinforce them with either brads or ⅛-in. dowels.

For an antique effect, round all corners and edges to simulate extensive wear. Finish the wood with a suitable stain, followed by a sealer coat of shellac and two coats of wax. Or you can use a stain-wax preparation that requires no further finish.

Drawers are of conventional construction, the fronts being ¼ to ⅝ in. thick, with sides, backs and bottoms of ⅛ to ¼-in. stock, plywood, or composition material.

The swinging-arm assembly is similar to those used on commercial lamps, and can be purchased from the Robboy Electric Mfg. Co., 2062 East 70th St., Cleveland, Ohio. The arm illustrated is No. RA 42 0, and has two rotary swivel connectors that permit it to be swung in any direction, and even in complete circles without twisting or damaging the wires. This arm costs around $2. It comes in brass, aluminum, and stainless steel finishes. Before installing permanently, polish all surfaces with fine-grit abrasive cloth followed by buffing on a rouge-charged cloth wheel. Apply a coat of clear lacquer to retard tarnishing. The brass unit matches the antique wood finish perfectly. Drawer knobs should match the arm.

To achieve a proper shade height, the swinging arm was mounted on a short vertical post. This post can be a section of brass pipe in a floor flange, the upper end fitted with a threaded plug or nipple that accommodates the ½-24 thread on the swivel connector shell. The post shown was made by machining a piece of brass rod to the outside diameter of the swivel shell, threading one end, drilling a 5/16-in. hole lengthwise for the wire, and silver-soldering the other end to a brass flange obtained from a water faucet. The flange was drilled for three mounting screws. This post assembly raises the arm swivel 2 in. above the base. •



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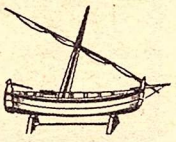
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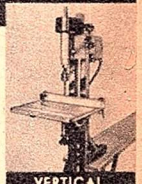
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Amateur Telescope Maker's Page

[*Continued from page* 155]

piece of precision optical equipment designed for spotting and determining the height of incoming planes. Later in the war it was supplanted by radar, so Uncle Sam declared them surplus. The item that caught my eye was a small aluminum box about 6x10x4 in. that contained a binocular eyepiece system with the following elements: two achromatic Kellner eyepieces with individual focusing systems, two deviation prisms and two color wheels actuated by a rack and pinion. Eureka! Here was just what I was looking for, "How much?" I said.

"Go ahead, take it for ten bucks."

I bought one to take apart and analyze, and one to start my binocular telescope project.

Let us make the case first. Assuming that our objective lenses have a focal length of 20 inches, our erectors will require about 5 inches, the Mark 1 eyepieces assembly takes about two inches, this adds up to 27 inches, so let us make the case 30 inches long. The extra three inches can be used as a sunshade.

The two optical glass windows mounted in aluminum cells are threaded into the case. Unscrew the cells from the case and remove the glass windows, leaving the empty cells. These two cells have an inside diameter of 1¼ in., which is just the right diameter to receive two 5 in. lengths of 1¼ in. outside diameter brass tubing. We can slip our erectors into the brass tubing and leave them there for adjustment later.

Now for mounting the objective lenses; we require a piece of plywood that will fit the exact inside diameter of our plywood case. Place this piece of plywood, the objective lens board. flush against the rear cover containing the glass windows. Mark off the exact optical window circles. Next bore two holes in the objective lens board equal in diameter to the objective lenses. Set the objectives into the holes and fasten them into place.

Summing up, we have the following setup, objective lenses, erectors and eyepieces arranged along an optical axis. The next step is to refine and adjust the various components to their correct positions. Select a firm surface upon which the instrument can be mounted rigidly. Set up a bright object at about 50 yards, this can be an electric bulb or street lamp. Adjust one side of the binocular at a time. Using the left eyepiece, bring the bright object into sharp focus. Once sharpness and clarity have been obtained, clamp or fasten the elements into position. Repeat the same process with the right eyepiece. Now that we have both separate parts working individually, we can proceed to make the final adjustments. Using both eyes this time, and focusing through both eyepieces, bring the object which we are looking at into sharp focus. If we are lucky, we will see the same object through both eyes clearly. If our optical elements are misaligned even a trifle, we will have two separate images, super-imposed upon each other. A slight re-orientation of the erectors or the objective lenses should correct this condition.—*Philip Weingarten* •

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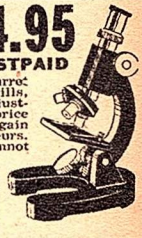
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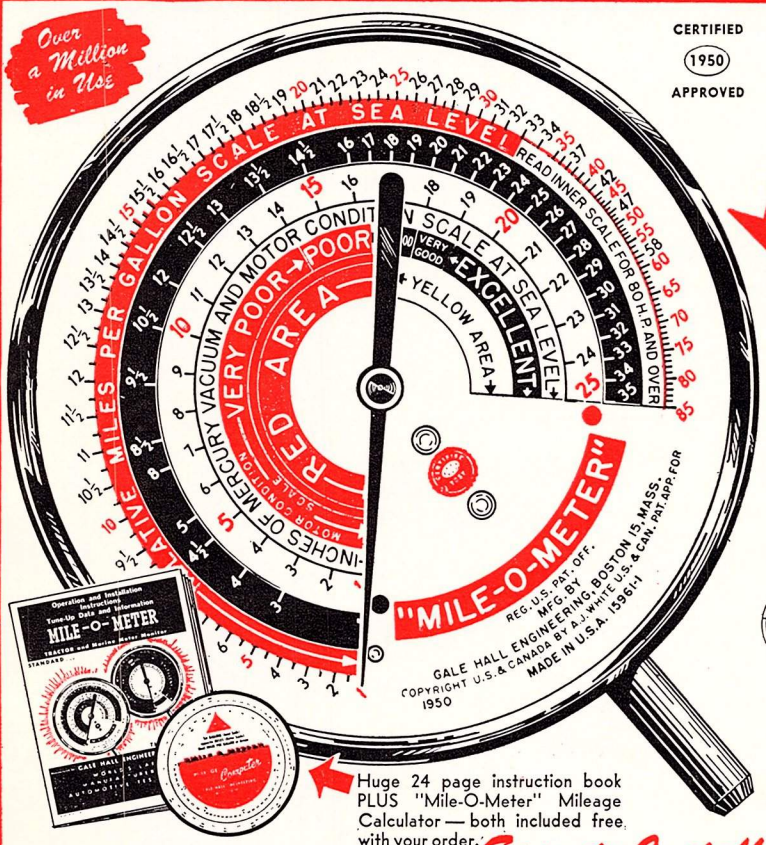
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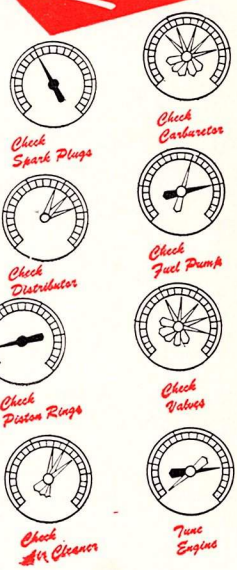
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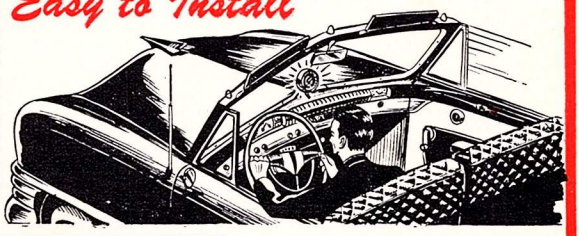


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